shelter: the third requirement

Your bird-attraction project will be complete when you provide shelter and nesting facilities. Most people regard shelter as the most important requirement; as a matter of fact, food and water are more effective means of attracting birds. But shelter and nesting facilities must be provided, because birds will not stay unless they have a place to build their nests and raise their young.

We have explained how the spreading out of cities over the countryside, deforestation, and the drainage of swamps have curtailed the natural supply of food for birds. These same factors have reduced the shelter available to them. Their cover has been further shrunk by our "clean" pastures and forests with the old dead trees cut down, brush

destroyed, and growth along fences removed. Any man-made devices that will help to replace the birds' dwindling supply of natural shelter will be a distinct benefit to them.

Successful bird attraction requires an adequate number of the right kind of birdhouses. Birdhouses must be built for specific types of birds, not just for birds in general, and they must be correctly located and maintained. The construction of birdhouses offers a dual pleasure: first, the enjoyment of making them; second, the adventure of attracting and sheltering birds with them.

know the birds you want to attract

It is common knowledge that wrens will build a nest in almost any type of shelter—an old tin can, a shoe, or a flowerpot. This fact has led many people to believe that all birds are no more selective in their choice of a shelter. This impression is far from the truth. Birds as a rule are very particular about where their nests are built and how they are made. For this reason you must plan a house for a specific bird, making sure that it is the correct size, has the proper opening, and is placed at a predetermined height above the ground. The birdhouses described in this book follow these specifications, and in building them you can be assured that they meet the needs of the birds for which they are intended.

two types of birds

The birds that the amateur bird fancier will want to attract to his birdhouse can be divided into two groups: the tree dwellers and the cavity dwellers. Tree dwellers will not live in a house or any kind of cavity. For example, the Baltimore Oriole will never build a nest in a man-made or a nature-made box. The oriole always builds its own graceful nest out of hair and other weaving materials, suspending it from branches, such as those of the elm tree. On the other hand, woodpeckers always build their nests in the hollow of trees or in other cavities.

A report of the United States Fish and Wildlife Service states that there are more than 50 species of birds that will occupy man-made houses. There should be little difficulty,

therefore, in attracting birds to one's premises with good shelters. The tree dwellers, those that build their own nests, can also be encouraged to set up housekeeping on your property. With the right kind of planting, which is discussed on page 41, and with ample food and water supplies, you can also have these birds as your guests during the summer. By pruning trees to provide natural crotches for the nests, by planting the right kind of ground cover, and by supplying materials for nest building, you can encourage them to stay.

You can attract birds to your home grounds by supplying the proper nesting materials and the proper places for them to build.

nesting materials

In a yard that is kept "spic and span," the birds will not be able to find the natural materials they need to build their nests. No matter how many houses are erected on a lot, no matter how good the trees are for nests, if the birds do not have the grass, string, straw, and other nesting materials, they cannot and will not build. An ample supply must be on hand from which the birds can select the materials they need. String, cotton, wool, and yarn are excellent building materials. See to it, however, that none of the pieces are over 4 inches in length. Birds may become entangled in long pieces and die. In addition to string and yarn, the following should be available:

Feathers	Down	Moss
Horsehair	Straw	Kapok
(from old upholstery)	Fur	Thread
Bark	Raveled rope	
Excelsior	Cellophane cigar wrappers	
Soft cloth strips		

You will think of other things that birds can use in the construction of their nests. Have some mud on hand for the robins, because, as you know, they line the nest with it.

Have your nesting material available for the birds early in spring, even if there is snow on the ground. The time of the arrival of the first robin is not too soon. If you want, you can build the simple nesting materials box shown on the following pages. With this box, the materials are readily available, are always dry, and the birds can select what they need. An added advantage of this box is that it can be used as a suet feeder after the nesting season.

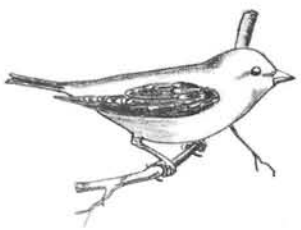
Milwaukee Public Museum Photos

nesting materials box

Very early in spring, perhaps right after the snow leaves, it is a good time to provide nesting materials for the birds. Here is a neat, handy box that stores the materials in one place, keeps them dry and ready for the birds to use, and when the nesting season is over, the box can be used as a suet feeder.

The construction of this neat, handy box is simple. Nail together the stock for the two sides so that these two pieces can be cut in one operation. Drill the ¼-inch holes for the dowels, making one right-hand and one left-hand. Cut all the other pieces. Nail the back to the bottom, and then nail on the sides after the dowels are inserted. Put brads through the dowels. Then fit the top or lid and attach it with a 1 by 1 inch hinge cut in half.

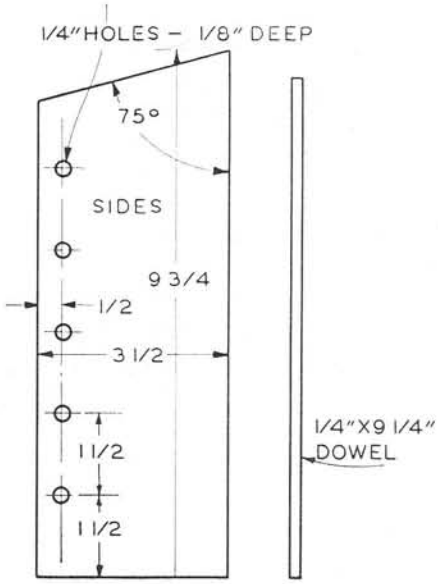
Give the box a coat of weatherproof stain or paint if you want to.

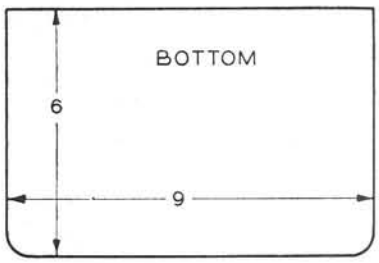


bill of materials

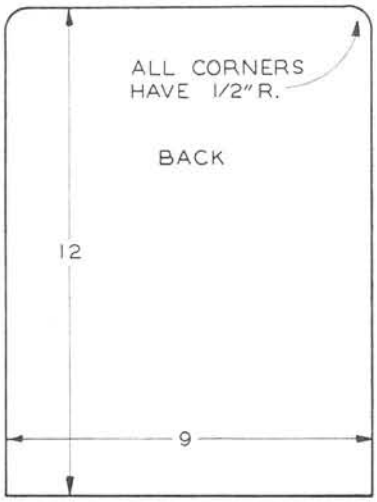
Sides:	2—½ x 3½ x 9¾ in.
Bottom:	1—½ x 6 x 9 in.
Back:	1—½ x 9 x 12 in.
Top:	1—½ x 5 x 12 in.
Dowels:	5—¼-in. dia. x 9¼ in. long
Hinge (with screws):	1—1 x 1 in.

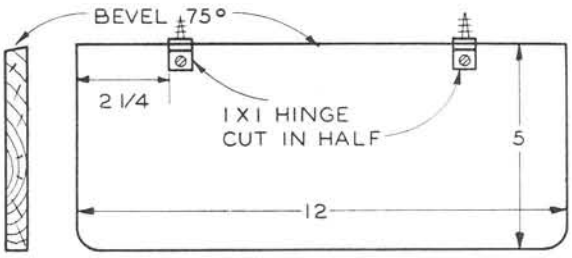
NESTING MATERIALS BOX





ALL STOCK 1/2"





commercial birdhouses

Some excellent birdhouses made by reputable firms are on the market. You will find the manufacturers listed in the better periodicals, such as the Audubon Magazine. While they will certainly meet the needs of the bird fancier, the manual training student and homecrafter can make houses that are just as good and cost a lot less. The houses shown on the following pages can be made by anyone. Other birdhouses are also sold that simply do not come up to basic requirements. Painted in bright colors to catch the customer's eye, they frequently are found on the shelves of roadside stands and novelty shops. As a rule they are not the right dimensions, have the wrong-size openings, are made of poor materials, and are constructed unsatisfactorily. They are designed for decoration rather than for bird attraction. This word of warning should be enough to steer you clear of them.

some practical building hints

Here are some suggestions for making any type of birdhouses. First, design it for the bird it is to shelter. Try to duplicate as closely as possible the natural shelter of the bird. A woodpecker, for example, will be more at home in a house covered with bark than one painted green. Second, construct your birdhouses with care, taking special pains to produce accurate, good fitting joints. Third, make the house pleasing in appearance but do not make a garden ornament out of it. You may like fancy designs and bright colors, but birds don't.

The houses on the following pages incorporate almost all of the following suggestions. There will be some variations in the specifications for a particular birdhouse, such as the use of tin or of roofing paper for covering the roof joint. Such variations can be supplied to any of the designs. Use your own imagination to make changes as long as you do not depart from the basic specifications and size. In most instances, the houses may be altered to accommodate other birds by changing the size of the opening and making the house deeper or shallower according to specifications for the species.

The full-page drawing gives the design and construction details for the birdhouse. Here are some suggestions:

1. Build the house for a specific species of bird. This point is so vital that we do not hesitate to repeat it. Each species will require some slight variation which should not be overlooked. Study the specifications carefully and do not alter the basic dimensions.

2. Use the right materials. Wood is the best all-around material for constructing birdhouses. It is a good insulator, it is inexpensive, it is easy to cut and assemble, and it is readily available. Use a softwood, like white pine. Pine is easy to work and can be bought at any lumberyard. Cedar is good also. Cypress will never rot but it is difficult to get, hard to drive nails into, and expensive. All of the houses in this book are made of ½-inch stock unless otherwise indicated. Pine of this thickness is simple to work, but if you cannot get it, use ¾-inch stock. In this event you may have to vary a few of the dimensions. Another excellent material is ½-inch outside plywood. It is more expensive, but the big sheets allow you to plan and cut your wood with a minimum of waste.

For the rustic type of house use air-dried logs. These may have checks in them, but when they are hollowed out, the imperfections do not matter. For roofs use slab stock with the bark on it if available. If possible, avoid using metal. It is too hot in summer and provides a poor foothold for both young and old birds.

3. It is not necessary to have a landing perch on smaller houses. A perch makes it simple for sparrows and other bothersome birds to enter nests where they are not wanted. Often the perch is added just for appearance.

4. Assemble securely. Use copper or aluminum nails to assemble birdhouses. Better still, use brass screws. Ordinary nails should be avoided because they soon rust and the house will fall apart.

5. Leave the inside rough. If you are going to use ½-inch lumber, your lumberman will take heavier stock and split it. He may want to smooth the lumber by running it through the planer but ask that it be left rough. When you build the house, lay out the pieces so that the rough surface will be on the inside when the house is assembled. The rough wood gives the baby birds, and the old ones as well, something to hang onto when crawling out of the nest. Some

books advise that the rough surfaces be located on the outside for rustic appearance. This suggestion is well intended but impractical. Lumber that is rough on both sides will provide both a foothold for the birds on the inside and a rustic appearance on the outside.

6. Provide ventilation. If a small house, poorly ventilated, is located in the sun and occupied by four or five baby birds, it can become so hot they will suffocate. You can provide adequate circulation by having vent holes at the top of the house below the extended roof boards. In some cases the sidepieces can be cut an eighth of an inch short so that there will be a vent along the upper side of the house.

7. Be sure that the house drains. If the bottom of the house is "glove-tight," any rain that seeps in or is driven in during a storm may accumulate and cause baby birds to drown. Drain holes in the bottom will prevent the house from flooding. All the houses in this book have swing-out bottoms for easy cleaning and are loosely fitted so that moisture cannot collect.

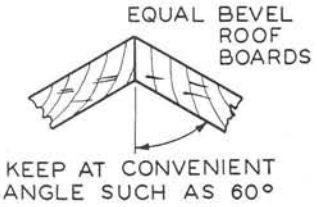
8. Have a tight roof. Generally, when the boards have been accurately cut and fitted, the roof will be waterproof. As an added precaution you can nail a tin strip over the ridge or cover it with roofing paper.

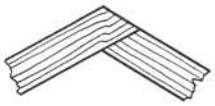
9. Protect the opening. See to it that the roof boards extend well over the front or opening side of the house. This overhang prevents rain from being blown into the house.

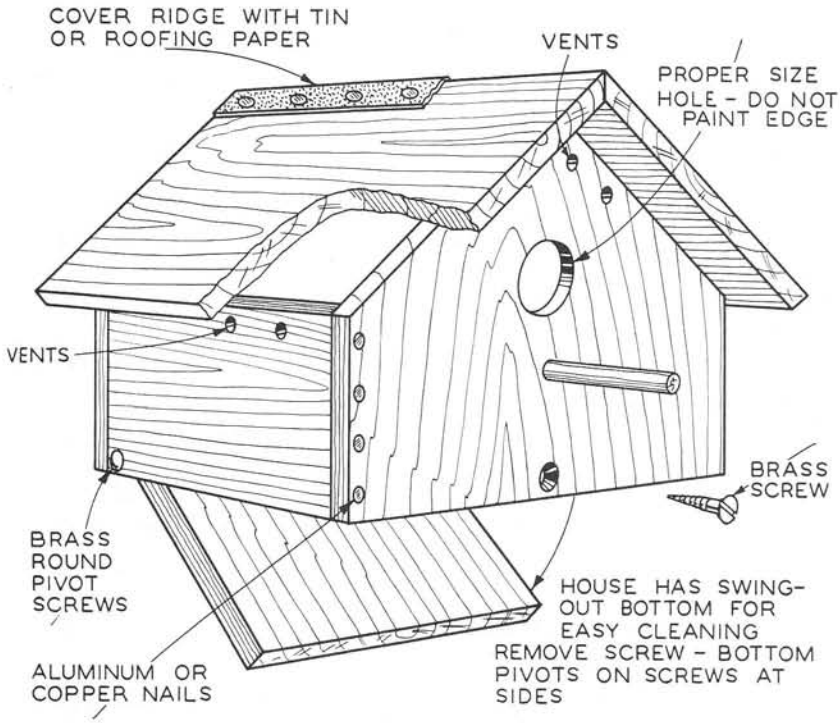
10. Be sure the house is easy to clean. In the houses shown there is a pivot screw at each side of the bottom toward the rear. Another screw holds the bottom at the front of the house. When the front screw is removed, the bottom swings out so that the entire inside may be cleaned. This is a simple way to make a house easy to clean without the use of hinges and other unnecessary hardware. The houses should be cleaned each year, late in fall or very early spring, to remove the old nest and any bugs or debris from the previous season. Do not wash out the house with soap and water unless you are positive that lice are present. If you like, you can put a very little, clean, new excelsior in the bottom of the house as a welcome for the new birds.

11. Give the house a suitable finish. Birdhouses can be painted and stained. A finish that will protect them against the weather may be preferred. However, select colors that are dull and drab; do not look for the brightest orange,

GENERAL CONSTRUCTION IDEAS







USE 1/2" OR 3/4" STOCK

ROUGH LUMBER IS BEST

DO NOT PAINT OR STAIN INSIDE OF HOUSE

ROOF SHOULD PROTECT ENTRANCE

PERCH MAY OR MAY NOT BE ADDED AS DESIRED

MOUNT HOUSE IN MOST CONVENIENT WAY - HANGING, ON POST OR ON SIDE OF BUILDING OR TREE

MOUNT AT PROPER HEIGHT

Dimensions of Birdhouses and Height They Should Be Placed Above the Ground

Bird	Inside of House	Depth of House	Size of Entrance	Entrance Above Floor	Height Above Ground
	Dimensions in Inches				Feet
Bewick's Wren	4 x 4	6 to 8	1	1 to 6	6 to 10
Carolina Wren	4 x 4	6 to 8	1⅛	1 to 6	6 to 10
Chickadee	4 x 4	8 to 10	1⅛	6 to 8	6 to 15
Downy Woodpecker	4 x 4	8 to 10	1¼	6 to 8	6 to 20
House Wren	4 x 4	6 to 8	1	1 to 6	6 to 10
Nuthatch	4 x 4	8 to 10	1¼	6 to 8	12 to 20
Titmouse	4 x 4	8 to 10	1¼	6 to 8	6 to 15
Bluebird	5 x 5	8	1½	6	5 to 10
Tree Swallow	5 x 5	6	1½	1 to 5	10 to 15
Violet-Green Swallow	5 x 5	6	1½	1 to 5	10 to 15
Crested Flycatcher	6 x 6	8 to 10	2	6 to 8	8 to 20
Golden-Fronted Woodpecker	6 x 6	12 to 15	2	9 to 12	12 to 20
Hairy Woodpecker	6 x 6	12 to 15	1½	9 to 12	12 to 20
House Finch	6 x 6	6	2	4	8 to 12
Purple Martin	6 x 6	6	2½	1	15 to 20
Redheaded Woodpecker	6 x 6	12 to 15	2	9 to 12	12 to 20
Saw-Whet Owl	6 x 6	10 to 12	2½	8 to 10	12 to 20
Starling	6 x 6	16 to 18	2	14 to 16	10 to 25
Flicker	7 x 7	16 to 18	2½	14 to 16	6 to 20
Screech Owl	8 x 8	12 to 15	3	9 to 12	10 to 30
Sparrow Hawk	8 x 8	12 to 15	3	9 to 12	10 to 30
Barn Owl	10 x 18	15 to 18	6	4	12 to 18
Wood Duck	10½ x 10½	24	3	20	10 to 25
SHELF NESTS					
Barn Swallow	6 x 6	6	(A)		8 to 12
Phoebe	6 x 6	6	(A)		8 to 12
Robin	6 x 8	8	(A)		6 to 15
Song Sparrow	6 x 6	6	(B)		1 to 3

(A) One or more sides open
(B) All sides open

red, or blue and expect the birds to flock to a house so decorated. Bright colors frighten birds and they will not come near them. Repainted old houses or new ones, if put up in the fall, will have the entire winter to weather and lose their "new look." Never paint or stain the inside of the house and do not paint or stain within ¼ inch of the opening. The feel of unfinished wood is more natural to birds than that of a painted surface. An exception to the principle of applying drab finishes on birdhouses is the use of white on martin houses. The light-reflecting qualities of white keep the house cooler and seem to attract this species.

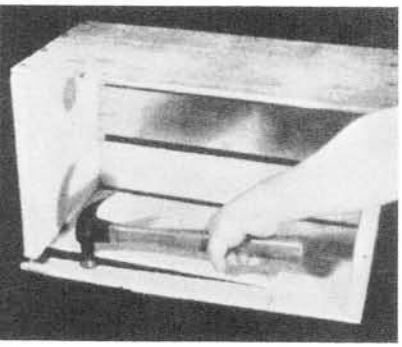
12. Use tested mounting and hanging arrangements. Shown on page 128 are several methods for hanging or supporting houses. Do not use ordinary screw eyes for hanging a house. They will hold when the house is new but after a short time the screws loosen up, water seeps into the holes, and the screw eyes pull out. If this occurs the house will fall and any young within will die or be injured.

construction: tools and procedures

The houses have been designed to accommodate the skill of the beginner and the average home craftsman, not the experienced carpenter, and so the construction is simple. The ordinary woodworking tools such as saw, square, and hammer, and other simple tools are all you will need. Of course, power tools such as a jig saw, band saw, drill press, and circular saw make possible faster construction and very accurate work.

lumber

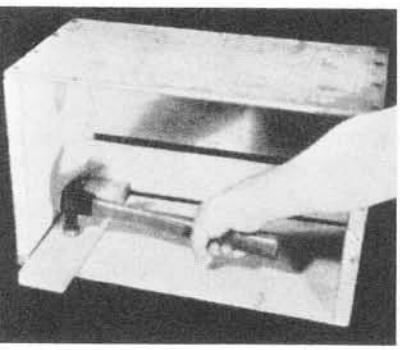
Lumber is expensive so it is worth your while to find a place where you can get it at a low cost or where you can obtain used wood. Discarded boxes have always made good birdhouse material. Apple boxes, pear boxes, and, as a matter of fact, all fruit boxes are excellent. Crating from furniture stores, boxes that are used to ship printing paper, and countless other types of shipping crates are made of very usable lumber. Often this is scrapped and you can have it if you haul it away. The wood is dry and seasoned.



Do not try to take boxes apart by hitting the sides with a hammer—the wood will split and be useless.

A few suggestions are shown here for taking the boxes apart. Never hit the side of thin boxes, or fruit boxes, with a hammer. Nine times out of ten you will split the wood. Instead, select a heavy wood block as long as the boards are wide. When this block is struck with the hammer, the entire end of the board is loosened. You can also take boxes apart by sawing off the board near the end. The small ends remaining are removed and the nails withdrawn easily.

In studying the plans for the house you are going to build, look for parts that have the same dimensions, such as the front and back. Nail together the two pieces of stock for such parts, mark one of them, and cut out both at the same time. This not only saves time but also insures cutting the pieces to the same size. They can be cut by hand with a cross-cut saw or with a power jig saw. In drilling the entrance hole, use an expansive bit and set it accurately. To prevent splintering the wood on the far side, clamp the stock in the bench vise, using a back-up block as shown on page 127. The bit will enter the second block, cut a clean sharp hole in the front of the house, and there will be no ragged edge.

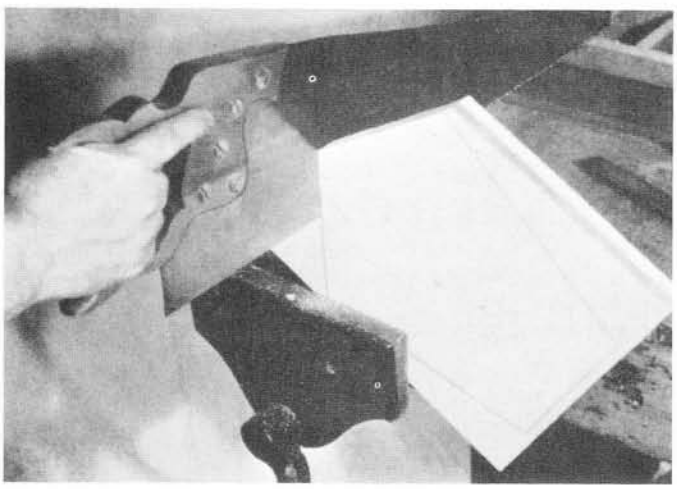


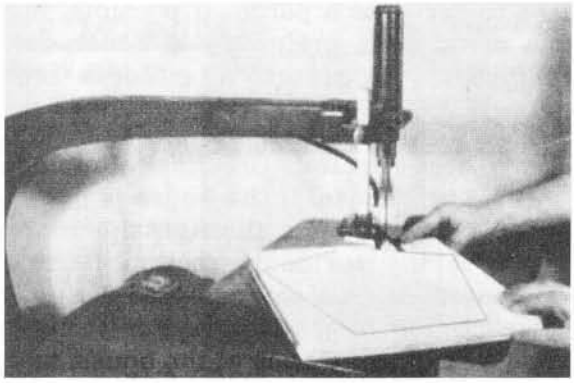
Note the correct way: place a block on the side so that blows of the hammer loosen the entire side without splitting.

Vent holes are usually made with a ¼-inch drill. A drill press or ordinary portable drill can be used instead of a hand drill. As a rule, the grain of the front and back pieces

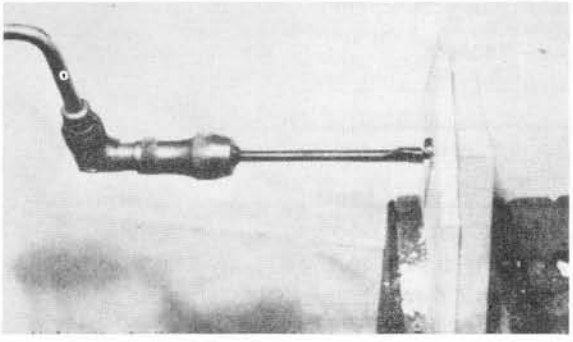
To make duplicate pieces, brad them together and saw both at the same time.

Saw off the sides of the box next to the nails. This method insures good pieces of wood without splits or hammer marks.

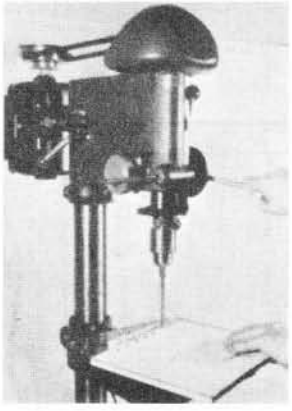




The use of a jig saw simplifies cutting of straight and curved pieces.



When boring the entrance hole with an expansive bit, place a scrap piece of wood in back of the hole to prevent splintering.



The drill press is used for boring all holes. Here vent holes are being made.

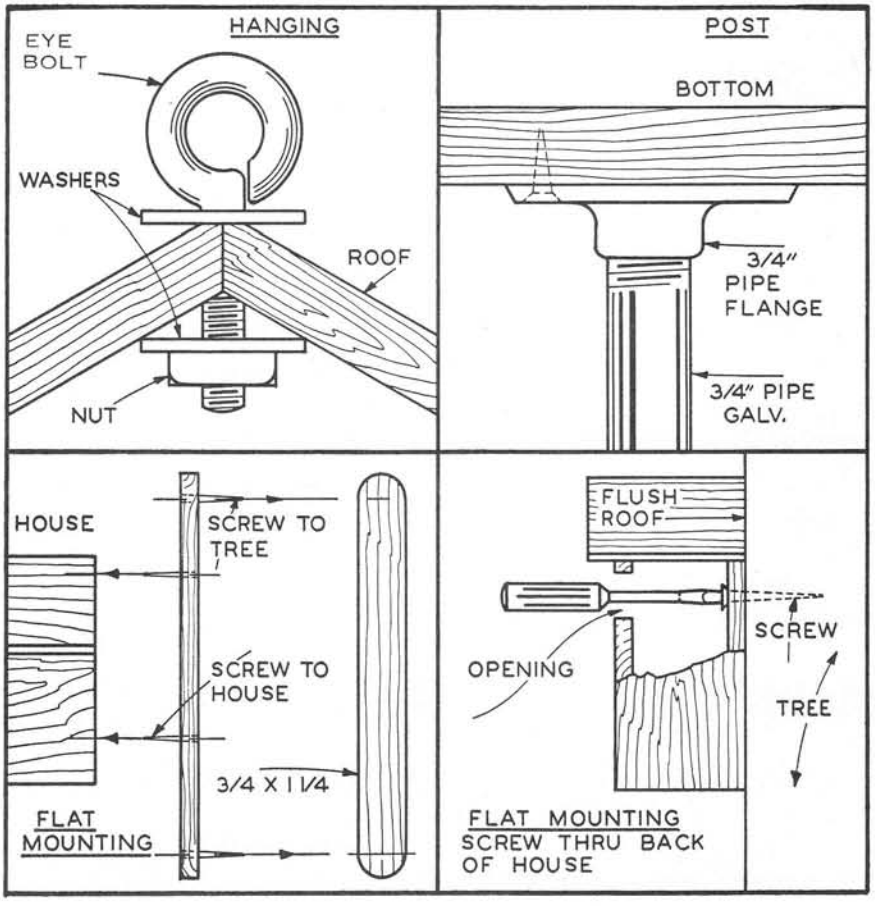
should run vertically. The grain for the sidepieces and roof pieces should run horizontally. Wherever possible, in order to make the cutting and fitting of the stock simple, the angles in the designs have been kept to simple degrees and values such as 45, 30, and 60 degrees. In a few cases other angles had to be used but they have been avoided if possible.

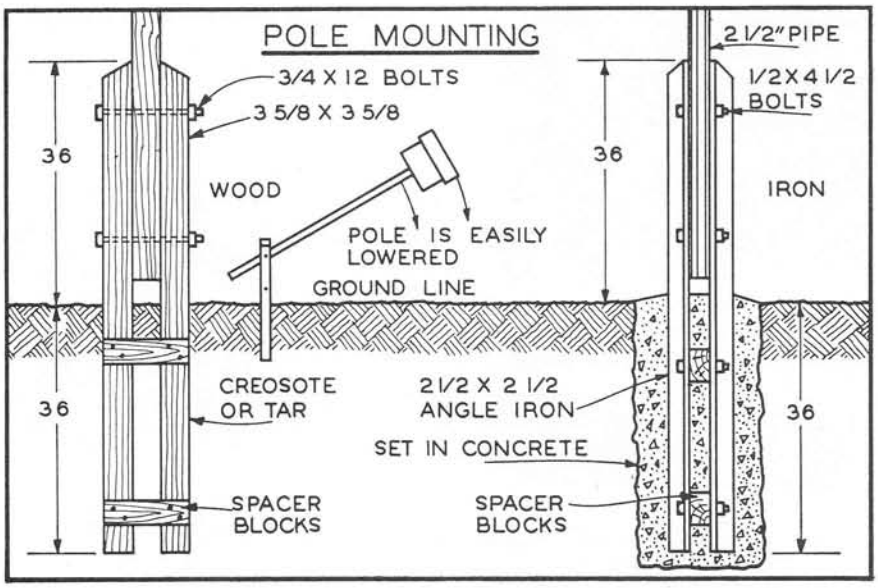
mounting the house

As already suggested, set up your birdhouse in the open, locating it where it will receive both light and shade. Be sure that there is no thick foliage nearby that can conceal enemies. At the same time, there should be trees reasonably

close to serve as a perch. If possible, mount the birdhouse on a metal pole, preferably a 1-inch or 1¼-inch pipe. Set the pipe in the ground in either a rock-lined hole or in concrete.

Shown here are four practical, simple ways of mounting a typical birdhouse. If the house is to be suspended, use an eye bolt that extends through the roof and hang it by a long wire to provide protection from cats. If the house is mounted on pipe, screw a pipe flange the size of the pipe to the bottom of the house. For a flat mounting method, screw a strip to the back of the house, or drill a hole through the back opposite the front opening, and insert a long screw through the back.

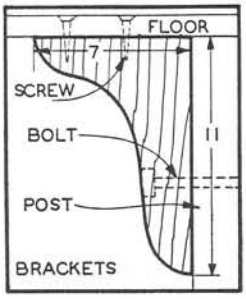




Here is a simple way to set wood or metal poles in the ground to support the heavy weight of the martin house. Use two bolts. The pole swings on one for easy lowering.

Shown above is a practical way of mounting heavy martin houses, using either a wood or metal pipe pole. For smaller, lighter houses you do not need poles as heavy as these, although it is a good idea to use this method of raising and lowering the house for cleaning.

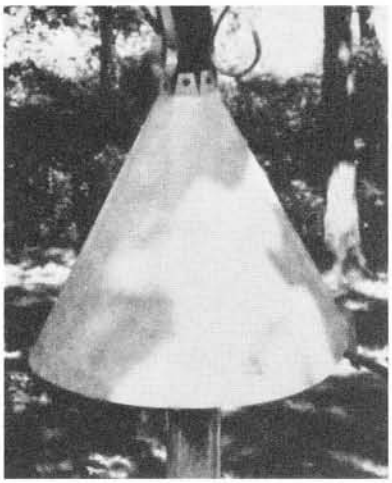
Martin houses are commonly mounted on poles that can be lowered for cleaning. Either 4 by 4's or a pipe held between two angle irons set in concrete can be used. The two-bolt hanging arrangement allows one bolt to be taken out, usually the lower one, while the upper one acts as a pivot for lowering the house. The wooden house can be attached to the wood pole by means of iron angle brackets, or ornamental scroll brackets can be cut out of wood and bolted in place. A wire stretched to the pole holding the house or a nearby upright structure is often provided to give them a place to rest.

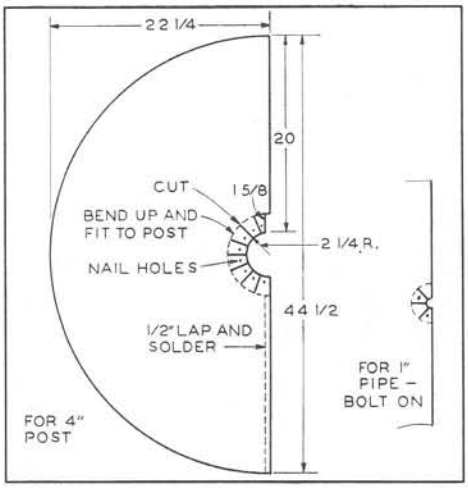


To fasten the wood martin house on the pole, make four wood brackets. Bolt them to the pole and screw on the martin house from inside.

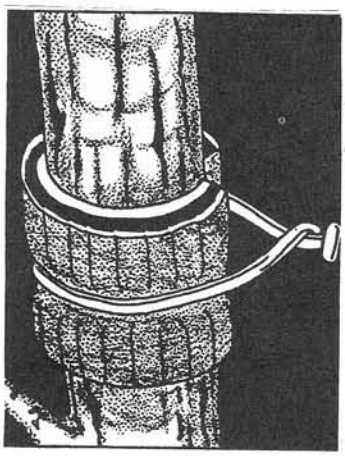
squirrel and cat guard

A galvanized-iron protector in the shape of an inverted cone nailed to the post or bolted to the pipe will prevent squirrels and cats from getting at your feeder, or birdhouse. The funnel should extend at least 10 inches from the post.





Shown and detailed is a typical installation. For mounting on pipe, the opening in the center must be smaller. To get an accurate fit, make a template out of paper or cardboard and then transfer it to the metal. Solder the ends of the metal together to avoid any ridges that would provide a foothold for squirrels.



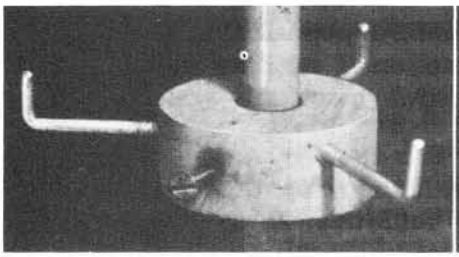
tree guard

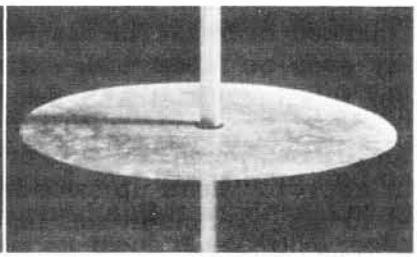
When hanging feeders or houses on tree branches, place a piece of split rubber garden house about the branch to prevent injury to the bark.

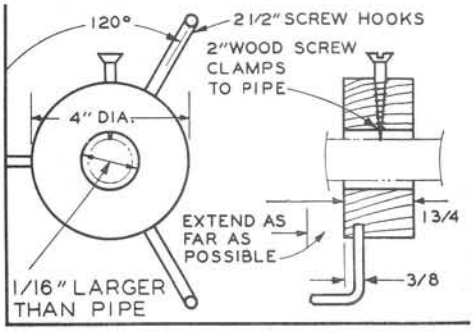
teeter-totter squirrel guard

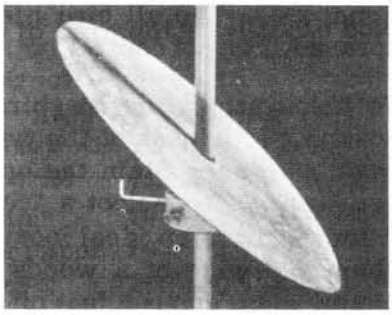
The principle of this effective squirrel guard is that it "floats" on three evenly spaced supports. If a squirrel gets on the edge, the guard tips and he finds himself back on the ground! The tin must be lightweight—if it is too heavy, a squirrel can get onto it, for a moment, which is just long enough for it to jump to the feeder above. If the guard is light he cannot get a foothold. The diameter of the guard should be at least 20 inches. The hole in the center of the

plate must be large enough to permit the plate to tip a full 45 degrees. For a 4-inch post the hole should be 5¾ inches; for ½-inch pipe, 1⅛ inches; for ¾-inch pipe, 1½ inches; and for 1 inch pipe, 1-13/16 inches.









For mounting on a post, use three headless 5-inch spikes evenly spaced around the upright to support the plate. Have them extend out as far as possible. For mounting on a metal pipe or rod, cut out a ring of hardwood as shown. The ring is held to the pipe by means of the wood screw that protrudes into the center opening. The center opening should be: for ½-inch pipe, ⅞-inch; for ¾-inch pipe, 1⅛-inches and for 1-inch pipe, 1-5/16-inches. The best position of the guard on the post is just below the feeder, but be sure that it does not touch the bottom of the feeder when it tilts to 45 degrees. This is one of the best guard designs available and it is simple and easy to make.

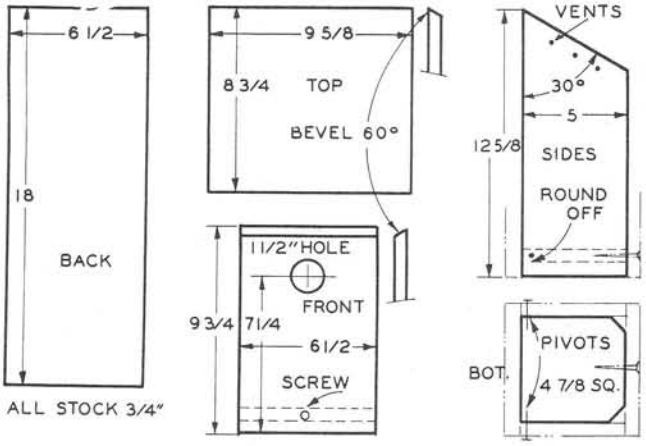
a house for your bluebird lane

Recent studies and counts by the National Audubon Society and the U. S. Fish and Wildlife Service show that there is a marked decrease in the bluebird population. Bluebirds may even be faced with extinction if nothing is done to help this beneficial and beautiful species.

The reasons for the decline of this species are many. First, our effort to "clean up" woods, fence rows, and fields have led to a reduction in nesting facilities. Hollow trees are cut down and old cedar fence posts are replaced by metal posts. These old posts and trees also are a source of food and as they are destroyed food is also destroyed. An additional hazard to all bird life is the ever-increasing use of sprays for insect control.

To help restore the bluebird population, you can build a dozen or so houses of the type shown here. Use any sort of wood available. Stain the houses a dark green or brown if you want. Then select a "route" or lane and install them. A fence row is an ideal location. Or, if you can, set them up along the edge of a woods with open fields on one side. Mount them about 5 feet off the ground. Do not place them near barns or dwellings. Since each bird has a definite territory, place the houses about 500 yards apart.

Visit your "lane" from time to time and see how your tenants are getting along. You are sure to find families in several of them. If you do not succeed the first year, don't give up—they will be there the following year. At the end of the season clean out the houses and have them ready for spring. It will be a lot of fun.



the covered-wagon wren house

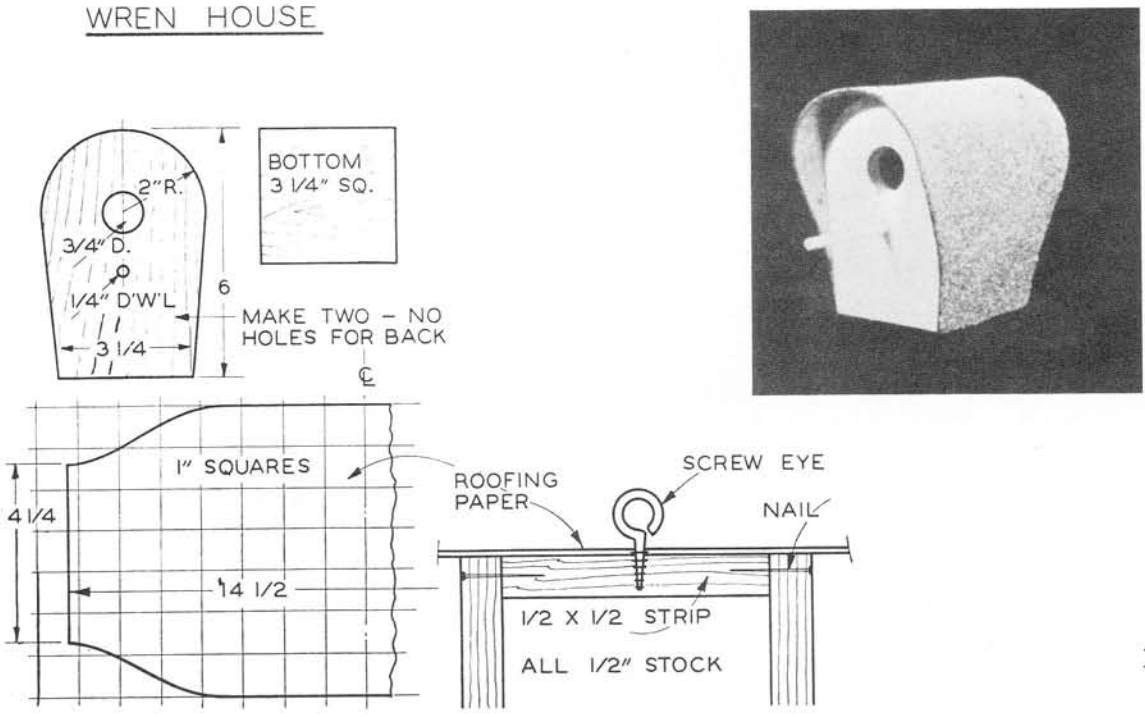
The covered-wagon wren house is a simple birdhouse that any boy or girl can build. It makes an excellent school group project. Wood and roofing paper are used in its construction.

Make the two endpieces first. Cut them out with coping saw or on a scroll saw. Drill the ¾-inch hole and the ¼-inch hole in one end as indicated. Cut the bottom and nail the ends to it. Cut the top strip and nail it in place. Lay out the pattern for the roof on paper, trace it onto the roofing paper, and cut with tin shears. Tack the roof to the endpieces and insert a screw eye.

Paint the outside of the house to harmonize with the color of the roofing paper.

bill of materials

Ends:	2— ½ x 4 x 6 in.
Bottom:	1— ½ x 3¼ x 3¼ in.
Top strip:	1— ½ x ½ x 3¼ in.
Roofing paper:	1—7 x 14½ in.
Screw eye:	1— ¾ in. long



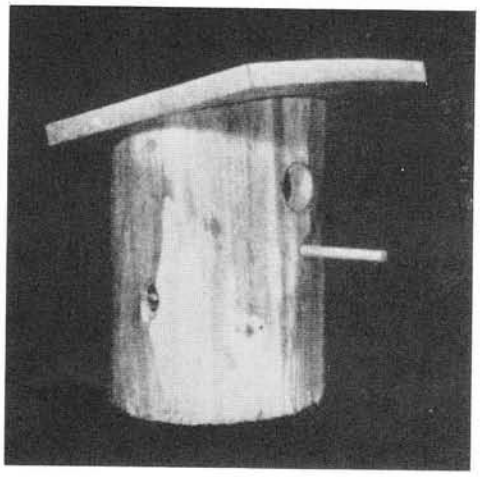
cedar-log wren house

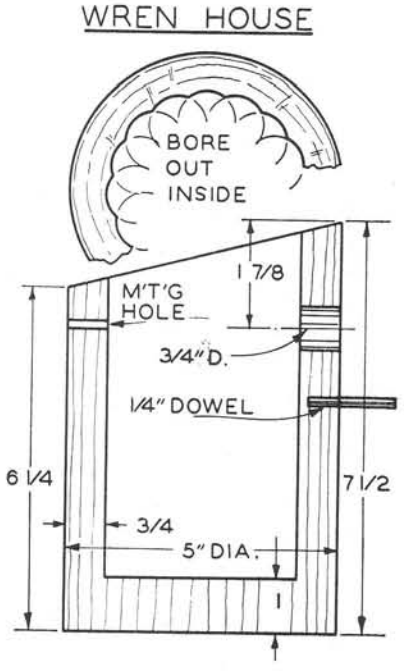
For the cedar-log wren house, use a piece of green cedar post that does not have a tendency to check or crack when drying. To form the 3½-inch nest, first drill a series of holes around the outside; then drill out the rest of the wood the same way. Cut the slant at the top and drill the entrance hole as well as the hole for the ¼-inch dowel perch. Cut the roof and nail it in place.

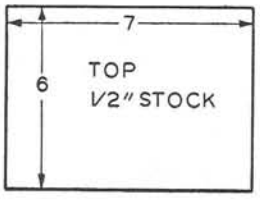
The wren house can be left natural and the roof stained brown or green. Mount the house through the hole in the back of the house opposite the front opening.

bill of materials

Cedar log for the body:	1— 5-in. dia. x 7½ in.
Roof:	1—½ x 6 x 7 in.
Dowel for perch:	1—¼-in. dia. x 3 in.

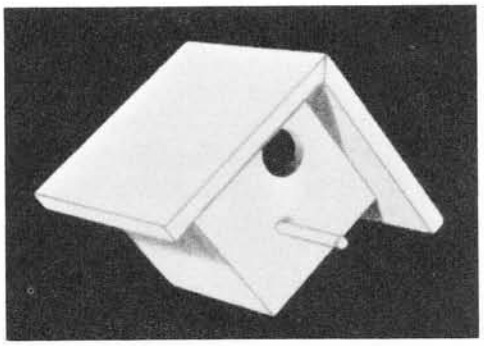


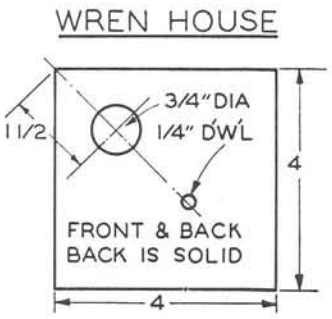


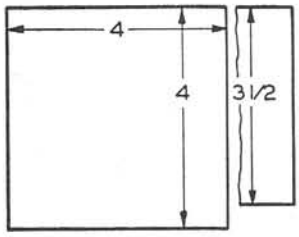


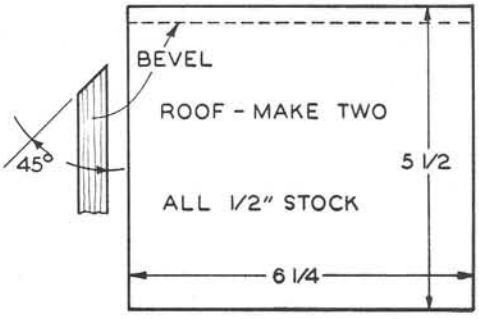
USE CEDAR POST

four-square wren house









The four-square wren house is simple in design and unique in appearance. It also is a fine group project for the school shop. The ends are 4 inches square. Drill the ¾-inch dia. entrance and the ¼-inch perch hole in one end. Make both sidepieces 4 inches long but make one of them 3½ inches wide and the other 4 inches wide. Make the two roof boards the same dimensions and bevel them 45 degrees as indicated. Nail the bottom edge of sides together. Next nail on the ends and then the roof.

Paint the wren house white if desired with a contrasting red or green roof. Mount by means of a screw eye.

bill of materials

Ends:	2— ½ x 4	x 4 in.
Side:	1— ½ x 4	x 4 in.
Side:	1— ½ x 3½	x 4 in.
Roof:	2— ½ x 5½	x 6¼ in.
Dowel for perch:	1— ¼-in. dia.	x 2 in.
Screw eye:	1—1 in. long	

house wren shelter

This house wren shelter has an ever popular design of pleasing proportions. The construction is relatively simple because all cuts are straight with only one angle, namely, that of the sidepieces.

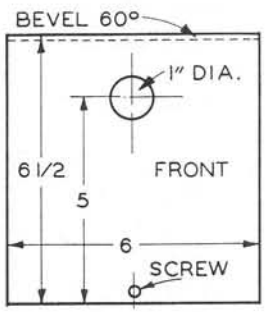
Cut the pieces for the sides and top to size. Nail on the front and back and then nail on the roof. Cut the bottom last and fit in place. Round off the rear bottom edge of the bottom so that it will swing freely. Drill pivot holes in the sides and insert brass screws through the holes and drive them into the bottom. Then put in the front screw which holds the bottom in place. Next fit the mounting strip in the back and notch out the roof as indicated. Be sure to make vent holes in the sides as shown on the drawing.

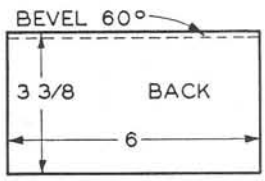
The house wren shelter can be stained or painted.

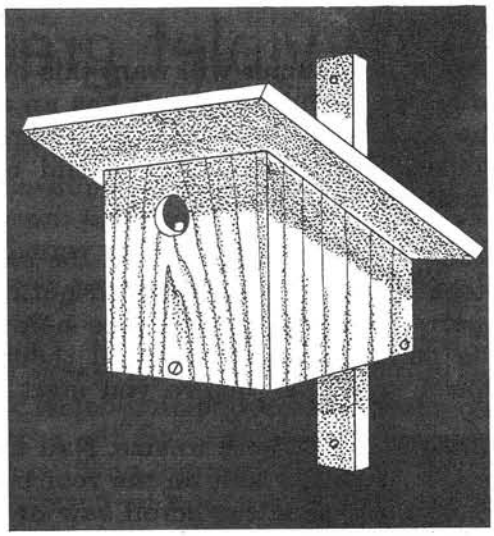
bill of materials

Sides:	2—½	x 5	x 6¼	in.
Front:	1—½	x 6	x 6½	in.
Back:	1—½	x 6	x 3⅜	in.
Roof:	1—½	x 10	x 9½	in.
Bottom:	1—½	x 5	x 5	in.
Mounting strip:	1—¾	x 1¼	x 12	in.

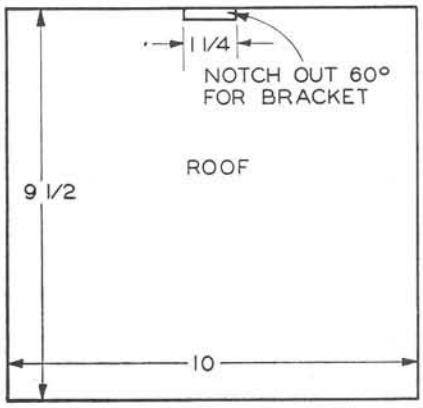
HOUSE WREN

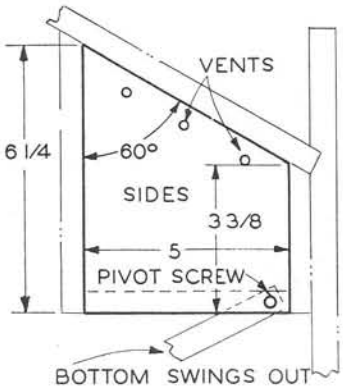


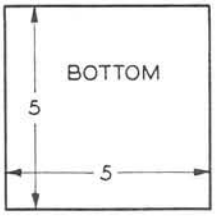




ALL STOCK
1/2"







3/4 X 1 1/4 X 12 BRACKET

bluebird house

Every bird fancier will want this house to attract bluebirds to his yard and garden. It has an attractive design and at the same time meets all the specifications for a bluebird house. The scrolled eaves lend charm to this fine bird dwelling.

Make the front and back at the same time by nailing the stock for them together and cutting them to size in one operation. Drill the entrance hole in the front piece. Cut the perch supports and nail them on the front with the dowel cross bar before you start to assemble the house.

Cut the other pieces to size. Nail the front and back to the sidepieces. Now nail on the roof boards. Then cut the decorative eaves on the scroll saw or with a coping saw, two at a time. Note that the top must have the same pitch as the roof, namely, 60 degrees on each side of center line. Nail the eaves to the roof in front and back ½ inch from the edge.

Now cut and fit the bottom. Round off the rear bottom edge of the bottom so it will swing clear for cleaning. Drill holes for the side pivot brass screws and then drive in these screws and the front holding screw. Use an eye bolt to mount this bluebird house as described on page 128.

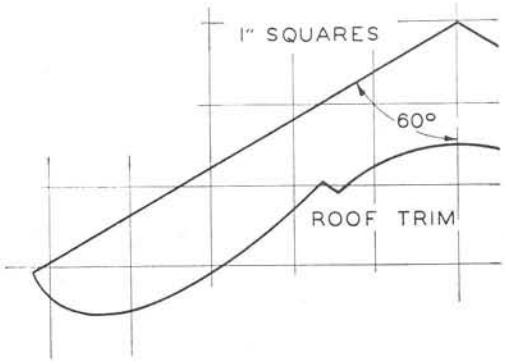
Stain or paint the house as desired. The roof can be a contrasting color.

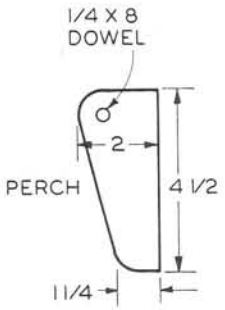
bill of materials

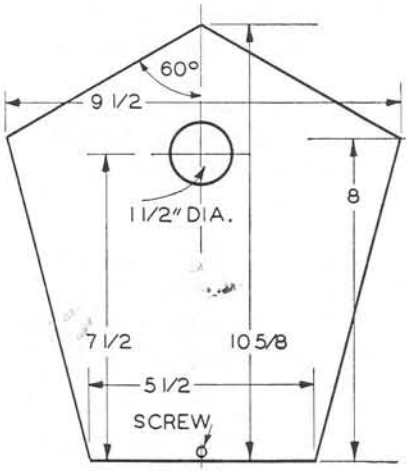
Front and back:	2— ½ x 9½ x 10⅝ in.
Sides:	2— ½ x 5 x 8 in.
Perch supports:	2— ½ x 2 x 4½ in.
Dowel for perch:	1— ¼-in. dia. dowel x 7 in. long
Roof:	2— ½ x 7½ x 10 in.
Bottom:	1—4½ x 5 in.
Scroll eaves:	2— ½ x 3½ x 10½ in.

BLUEBIRD

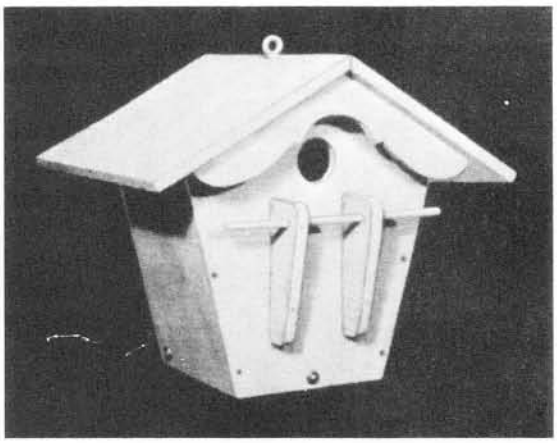
ALL STOCK 1/2"

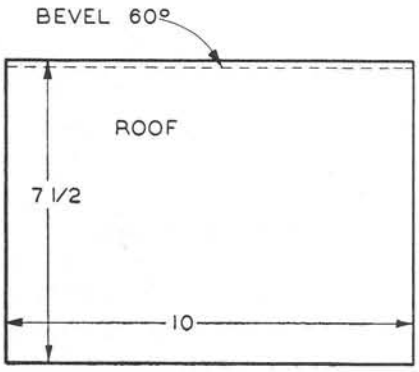


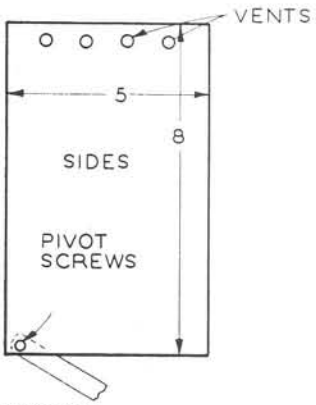




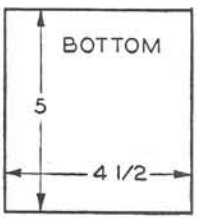
FRONT & BACK
NO HOLES IN BACK







BOTTOM
SWINGS OUT



house for a tree swallow or violet green swallow

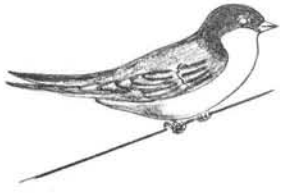
The house shown on the opposite page offers a challenge to the craftsman since it requires compound angles at all the corners. If made by hand the sides must be beveled at angles of 54 degrees for the wall joints and 51 degrees for the roof. Square up the pieces and then bevel the edges.

If a circular saw is available, you can expedite the job by setting the saw and miter gauge as indicated and sawing the pieces on a production basis. For the side walls, tilt the saw 41¾ degrees and set the miter gauge 71¼ degrees if the gauge in the normal position reads 90 degrees. Boards 7 inches wide can then be beveled to the correct angle.

Repeat this operation for the four roof boards but set the saw and the miter gauge at the required angles. It is suggested that you run through a piece of scrap wood as a check before making the final cuts.

Drill the entrance in one side. Assemble the body of the house part and then the roof and nail together. Then cut and fit the bottom. Drill the holes for the brass pivot screws on both sides and screw them in place. Then drive in the front holding screw.

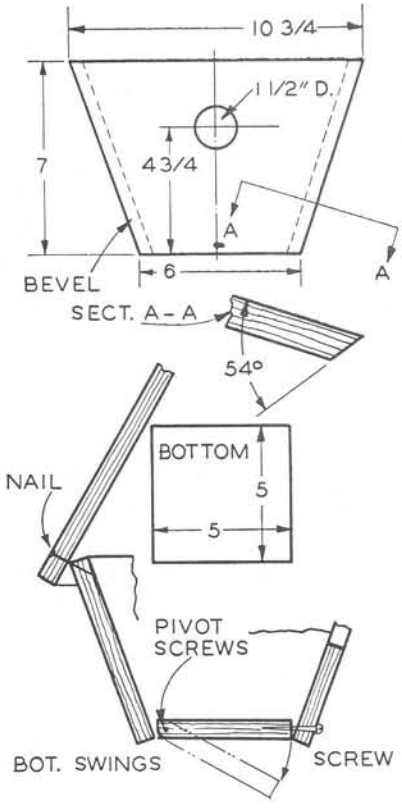
Mount the house by using a screw bolt with washers top and bottom as explained on page 128. The house can be painted or stained.

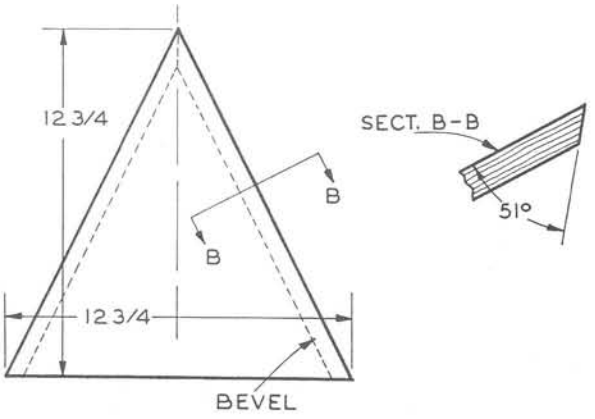


bill of materials

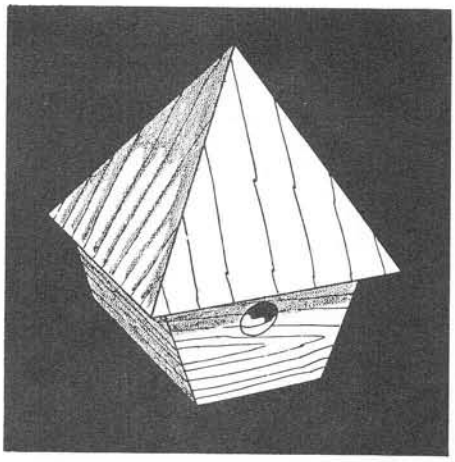
Sides:	4—½ x 10¾ x 7 in.
Roof:	4—½ x 12¾ x 12¾ in.
Bottom:	1—½ x 5 x 5 in.
Screw bolt:	1—¼-in. dia. x 4 in.

TREE SWALLOW
VIOLET GREEN SWALLOW



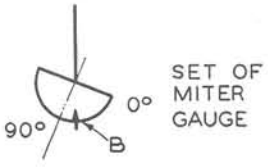


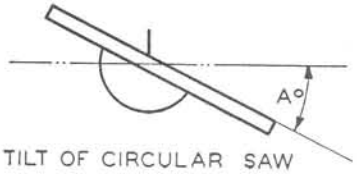
ALL STOCK 1/2"



TO CUT ON CIRCULAR SAW :

	TILT SAW A°	MIT. GAUGE B
ROOF	37 3/4°	63 1/2°
SIDES	41 3/4°	71 1/4°





TILT OF CIRCULAR SAW

flicker house

The design and dimensions of this flicker house are especially tailored to meet the requirements of this interesting bird. The swing-out bottom makes it easy to clean. The roof is flush in back for mounting against a tree or a building.

Only the front has the ornamental design. Make the front first and then the back, taking care that the roof angles are the same. Then cut the other pieces. Nail the back to the side pieces. Then nail on the front after the perch brackets have been nailed on from the inside. Keep the house square. Nail on the two roof boards and then the ornamental scroll eaves at the front. The roof is flush with the back. The eaves set back 1 inch from the front edge.

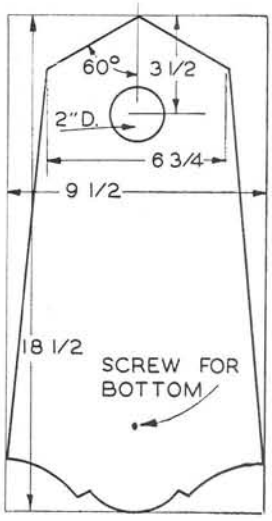
Cut and fit the bottom. Drill a hole on both sides for the pivot screw. Round off the bottom back edge of the bottom so that it swings free. Hold it in place with two brass pivot screws, one on each side, and the holding screw in front. Mount the house through a hole in the back or by means of a mounting strip extending from the top to the bottom and screwed on from the back.

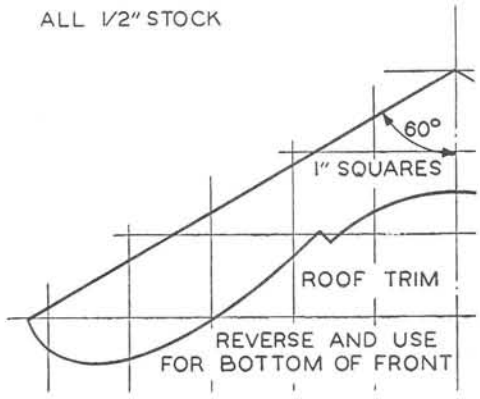
Stain the house a deep brown or dark green.

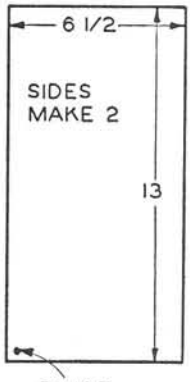
bill of materials

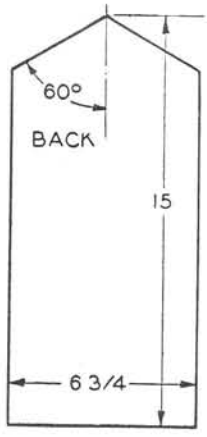
Front:	1—½ x 9½ x 18½ in.
Back:	1—½ x 6¾ x 15 in.
Sides:	2—½ x 6½ x 13 in.
Roof:	2—½ x 7½ x 10 in.
Bottom:	1—½ x 5¾ x 6½ in.
Perch brackets:	2—½ x 1¾ x 4½ in.
Dowel for perch:	1—¼-in. dia. x 7 in.
Ornamental eave:	1—½ x 3½ x 10½ in.

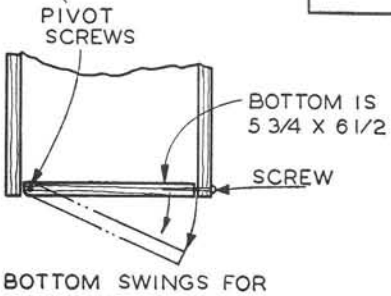
FLICKER HOUSE



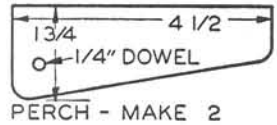




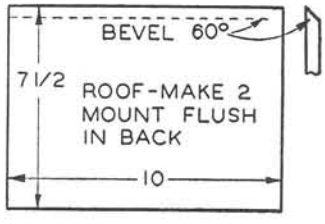




BOTTOM SWINGS FOR CLEANING



PERCH - MAKE 2



chickadee split-log house

Shop students and homecraftsmen have a lot of fun constructing a split-log chickadee house, although it requires a considerable amount of handwork. However, when this model is made with care, the final product is a unique house that is well worth the effort.

Select any solid check-free log about 6 inches in diameter and 12 inches long. Use elm, pine, spruce, or any similar wood. Do not use one of the hardwoods because it would be difficult to gouge out the inside.

If a band saw is available, split the log as shown or cut it by hand with a ripsaw. To keep the log from rolling while you are sawing, nail two 45-degree strips on the bottom as shown. Be sure the nails are not in the path of the saw. The saw blade will not pinch and cutting will be made safe.

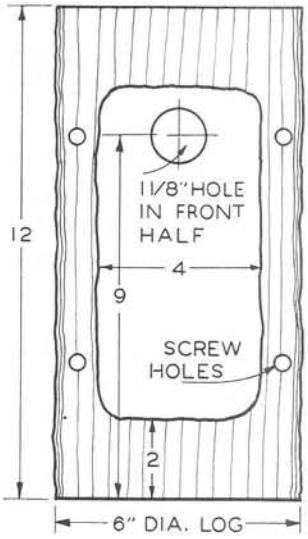
Gouge out the two halves after they have been marked. In one half drill the 1⅛-inch entrance hole. In the other half, opposite the entrance hole, drill the hole for the mounting screw. Now tie the two halves together with a piece of rope and put them in accurate alignment. Drill the four screw holes and screw the two pieces together, using brass screws. The holes may be plugged if desired. Cut the top even and nail the roof on the rear half of the house. Do not nail it onto the front because the front may be removed by loosening the four screws for cleaning the house.

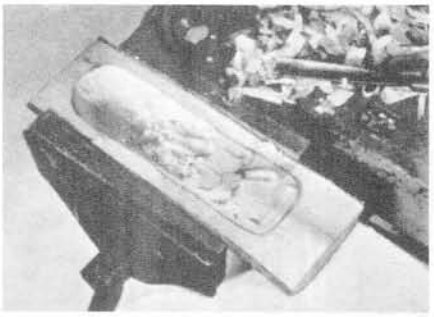
No stain or paint is needed.

bill of materials

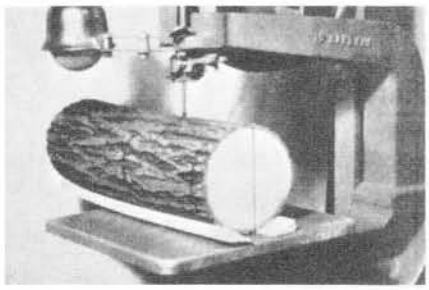
Log for body:	1—6-in. dia. x 12 in.
Roof (slab with bark):	1—7 in. x 7 in.
Brass screws:	4—2½ in. long

CHICKADEE

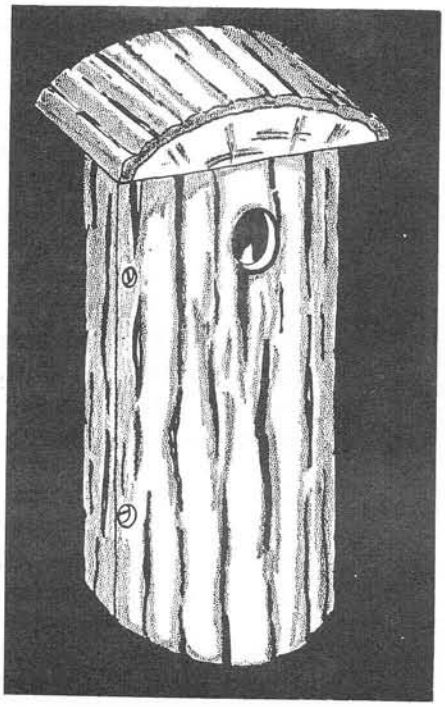


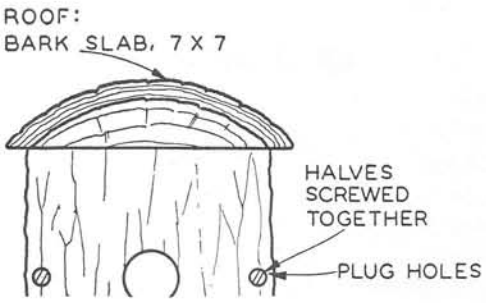


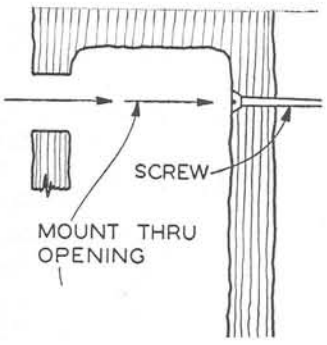
GOUGE OUT BY HAND



SPLIT LOG ON BAND SAW





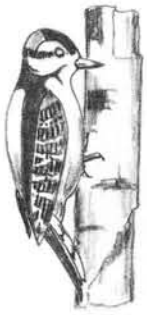


downy woodpecker rustic log house

This downy woodpecker house is another split log house that is quite simple to make but requires a little more handwork than the average birdhouse. However, these rustic houses always lend a special charm to the yard or garden where they are used.

Select a softwood log such as pine, spruce, or cedar that is solid and free of checks and has the bark adhering to it. The log should be 6 inches in diameter and 14 inches long. Split it on a band saw as shown on page 145 or cut it by hand with the ripsaw. With a gouge and mallet hollow out both halves from top to bottom, making the depression about 4 inches in diameter.

Now put the two halves together and tie rope around them so they cannot move. Drill the four holes and fasten the pieces together with brass screws 2 ½inches long. Remove the rope. Then fit in a ¾-inch round wood bottom held in place with wood screws so that it can be easily removed for cleaning. Drill the entrance hole and the hole for the ⅜-inch dowel perch. Cut the top for the roof at a 55-degree angle and nail on the roof boards.

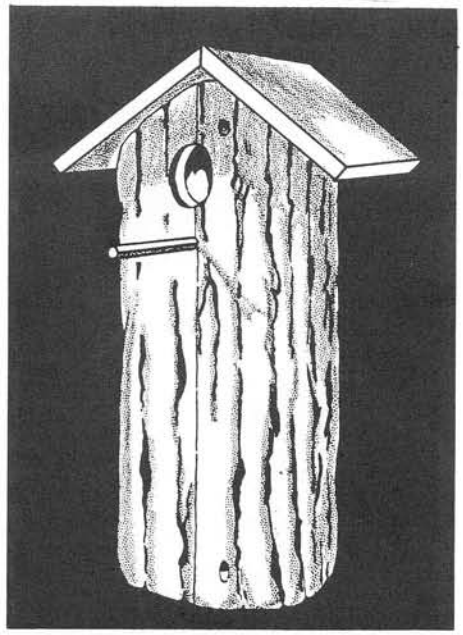


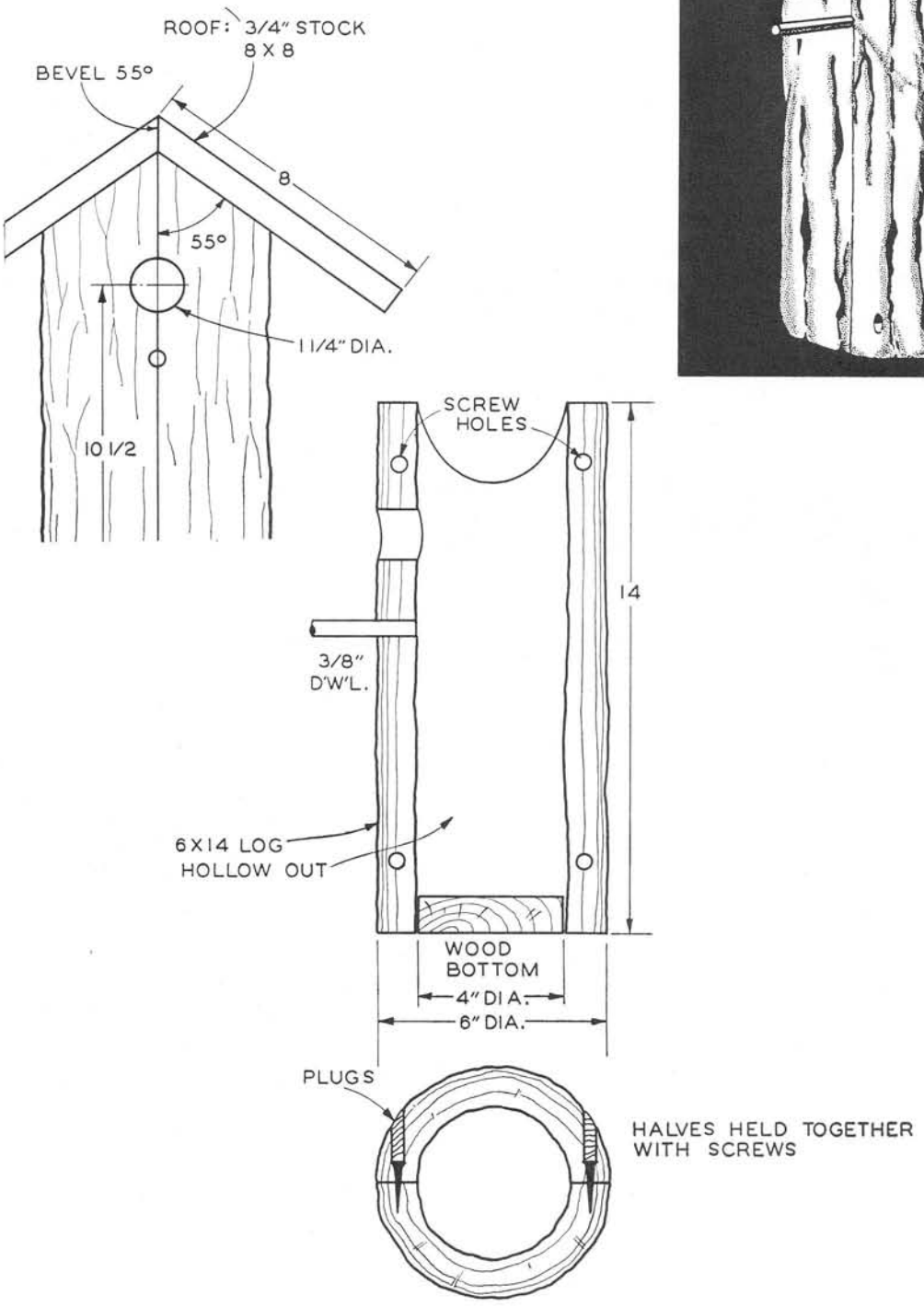
The roof can be stained dark brown or green. Mount the house by means of screws driven through the back and into a block nailed to a tree. The block is necessary to accommodate the roof which has an overhang in the back.

bill of materials

Log for body:	1—6 in. in dia. x 14 in.
Bottom:	1—¾ x approx. 4-in. dia.
Roof:	2—¾ x 8 x 8 in.
Dowel for perch:	1—⅜ in. dia. x 3½ in.
Brass screws:	4—2½ in. long

DOWNY WOODPECKER





red-headed and hairy woodpecker six-sided house

A power jointer facilitates the building of this woodpecker house since the 60-degree bevel on the sides can be accurately and easily produced on this machine. However, good joints can be made by hand and it is a proof of skill to make the beveled edges even and fit snugly.

Cut the six sidepieces to the same dimensions and bevel the edges. In one piece, which will be the front, bore the 2-inch diameter entrance hole. Nail the six pieces together by double toenailing. Cut and fit in the six-sided bottom. Hold it in place with three brass wood screws, 1 inch long. This method of attachment allows it to be removed for easy cleaning.

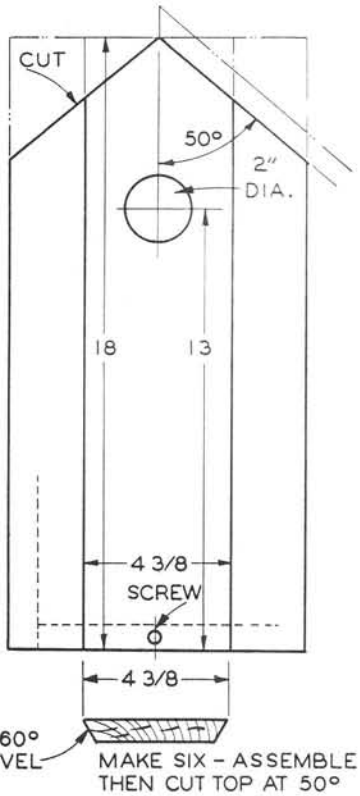
Now set the house down on its back and mark off the 60-degree pitch of the roof on the front. Cut the sides to this slant for the roof. Make the roof boards and nail them in place.

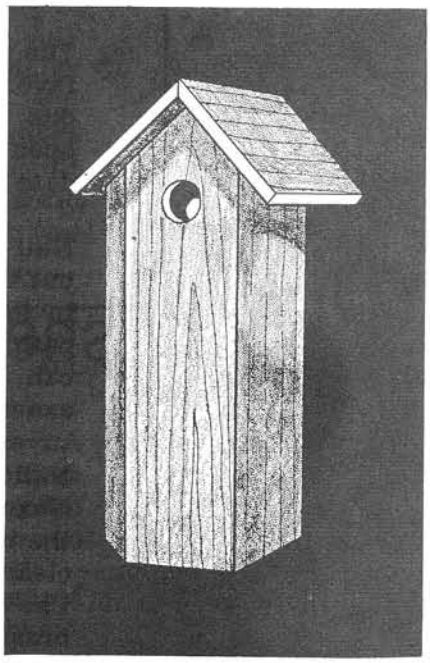
Stain the house dark brown with weatherproof stain. Since the roof is flush in back, it can be mounted by screw through the back as shown on the drawing.

bill of materials

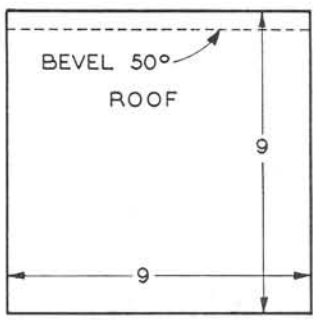
Sides:	6—¾	x 4⅜	x 18	in.
Bottom:	1—¾	x 6	x 6⅞	in.
Roof:	2—¾	x 9	x 9	in.

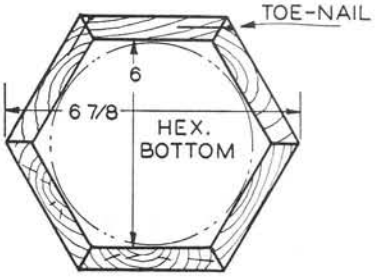
REDHEADED WOODPECKER
HAIRY WOODPECKER

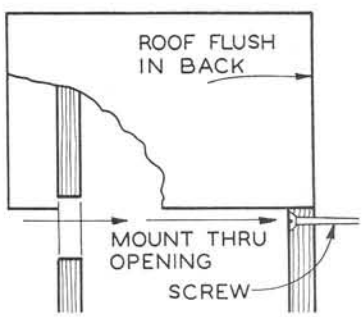




ALL STOCK 3/4"







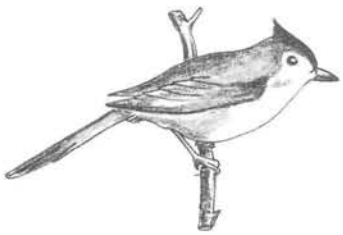
titmouse house

The pleasing lines of this titmouse house have made it the favorite of many bird attractors. This house is an excellent one to adapt for other birds by altering the size of the opening, the depth, and the inside dimensions to accommodate them.

Nail together the stock for the front and back pieces, and cut these parts at the same time. Make the entrance hole in the front. Now carefully lay out the side pieces, duplicating the scroll design on the front edge. These parts, too, can be nailed together for cutting in order to produce exactly matching pieces.

Nail the sides onto the back and then nail the front in place. Next nail on the roof boards. Cut the bottom and round off the bottom top edge so that the bottom will swing free for cleaning. Drill the holes for the pivot screws in the sides. Use brass screws to hold the bottom in place. Put another brass screw in the front. Screw the mounting bracket on the back.

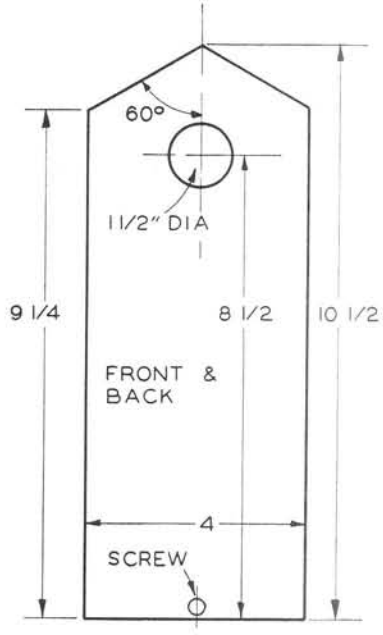
Give the house a coat of waterproof brown stain.

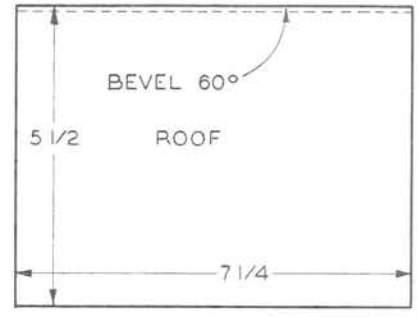


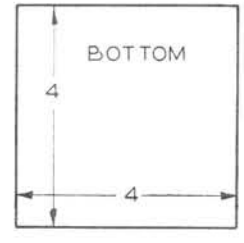
bill of materials

Front and back:	2—½ x 4 x 10½ in.
Sides:	2—½ x 6¾ x 9 in.
Roof:	2—½ x 5½ x 7¼ in.
Bottom:	1—½ x 4 x 4 in.
Mounting bracket:	1—¾ x 1½ x 18 in.
Dowel for perch:	1—¼ in. dia. x 9 in.

TITMOUSE

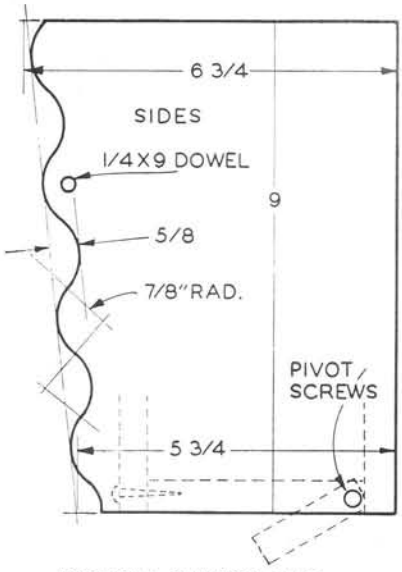






ALL STOCK
1/2"

3/4 X 1 1/2 X 18 MOUNTING BR'K'T



BOTTOM SWINGS OUT

location suggestions

The question is often asked: where is the best place to mount and locate a bird house? The answer is: never locate it in deep shade or thick foliage. Place the house in partial shade so that it is kept cool, out of the sun's hot rays. However, do not select heavy foliage because enemies of birds may hide there and the birds will be wary of it. A few dead branches near the house will afford good perches.

robin shelf

Anyone can make a robin shelf which is as simple in construction as the one shown here. Although the supporting brackets are scrolled, they can be made straight if you do not want the curved cuts.

Make all the pieces according to the specifications on the drawing. Nail the roof on the back and then nail in the roof supporting brackets from the back and top. Next nail on the bottom and then the side brackets to complete the shelf.

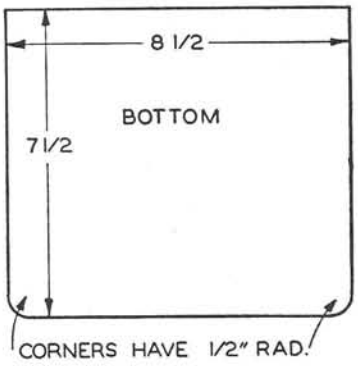
Give the robin shelf a coat of weatherproof stain. It might also be painted dark green or brown.

This robin shelf can be mounted under the eaves of a house or garage or in some other protected place. Never place it in the direct sun or in the open. As an added feature, small pegs can be installed in the top surface of the bottom to act as anchors for the nest. These pegs can be ¼-inch dowels extending ¾ inches to 1 inch above the floor.

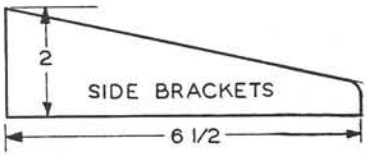
bill of materials

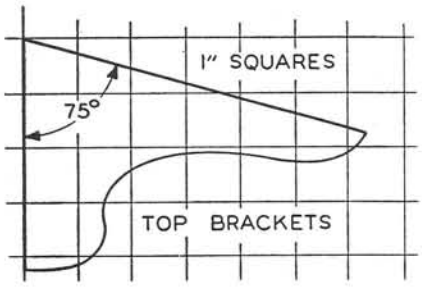
Back:	1—½ x 8½ x 9½ in.
Roof:	1—½ x 7½ x 10½ in.
Bottom:	1—½ x 8½ x 7½ in.
Top supporting brackets:	2—½ x 4¼ x 6½ in.
Side brackets:	2—½ x 2 x 6½ in.

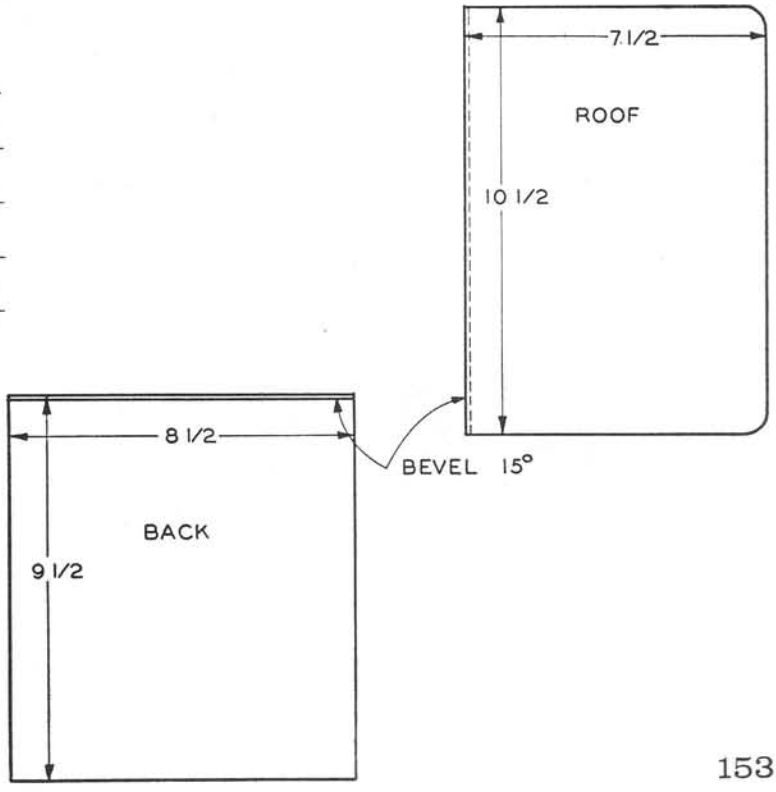
ROBIN SHELF



ALL STOCK 1/2"







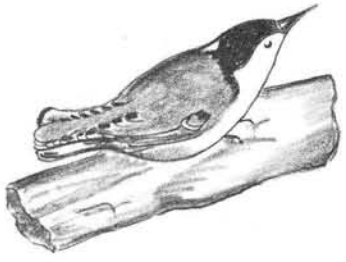
nuthatch house

This nuthatch house is of an old design but it is one that is always well liked. Perhaps the reason for its popularity is due to the fact that while the house has an elaborate appearance it is very simple to build. It requires a minimum of stock and consists of only a few parts.

Nail together the stock for the front and the back and cut the pieces at the same time. Then bore the entrance hole in the front piece. Next make the roof and nail on the front and back.

Cut and fit the bottom accurately. Hold it in place with two brass screws in front and two in back as indicated. If screws are used for this purpose, the house can be easily cleaned. The house can be mounted on a ¾-inch pipe flange and on a pipe as shown on page 128, or the screw-bolt mounting method may be used.

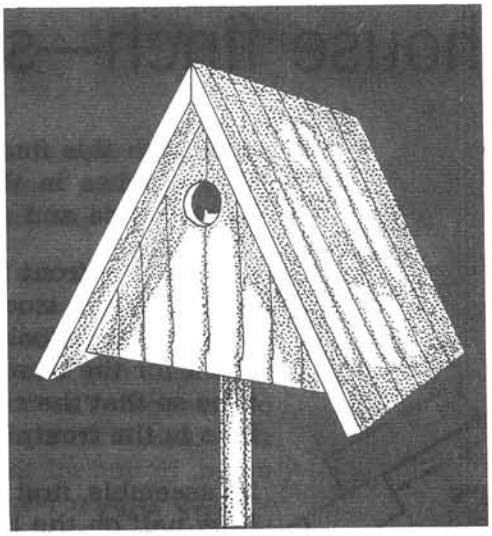
Stain or paint house but use a dark color.

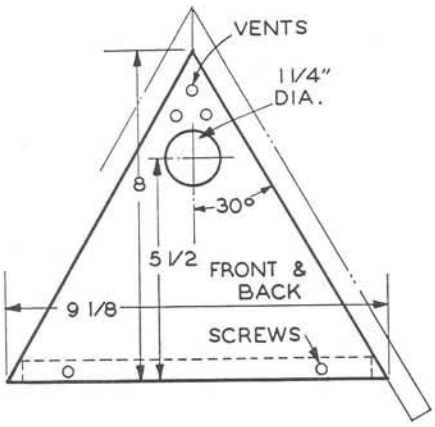


bill of materials

Front and back:	2—½ x 9⅛ x 8 in.
Roof:	2—½ x 11½ x 11½ in.
Bottom:	1—½ x 8½ x 8½ in.

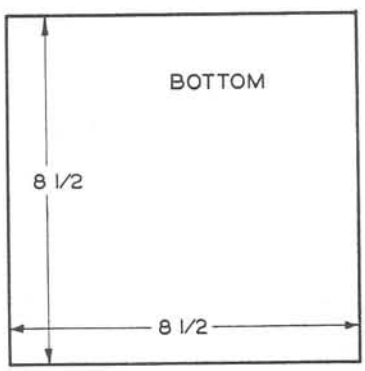
NUTHATCH

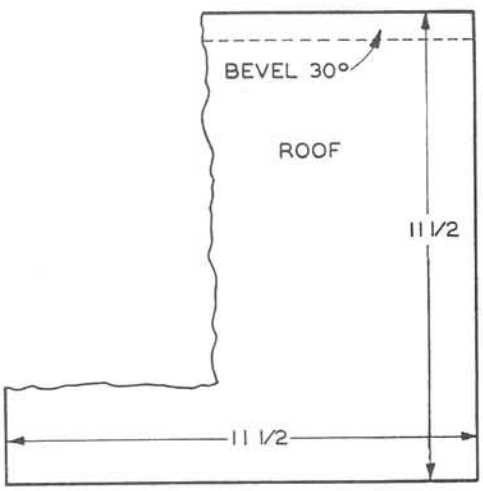




ALL STOCK
1/2"

3/4" PIPE FLANGE MOUNTING





house finch—shelter I

Although this finch house is quite simple to assemble, the roof notches in the front and back pieces must be accurately made and do present a challenge to the builder.

Lay out the front full size on a piece of paper. Transfer this layout to the stock either by tracing or by attaching the paper to the stock with cellophane tape. Nail together the stock for the front and back and cut them out at the same time so that the roof and side pieces will fit tight. Bore the hole in the frontpiece. Now cut the other pieces.

To assemble, first nail the front and back to the side pieces. Now nail on the lower roof pieces and finish with the beveled ridge pieces. Drill holes for the brass pivot screws on both sides. Round off the bottom rear edge of bottom so that it will swing clear for cleaning. Screw in the pivot screws. Install another brass holding screw in the front after drilling a hole for it.

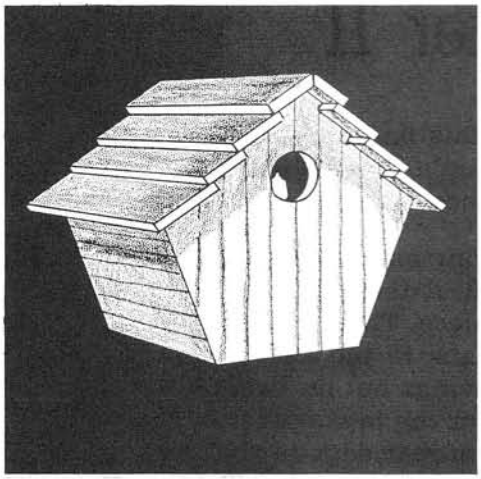
Stain or paint the house using dull, dark colors.

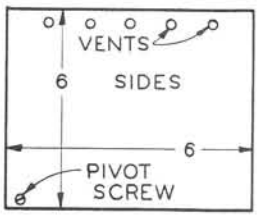
The finch house can be mounted on a pipe flange and galvanized pipe.

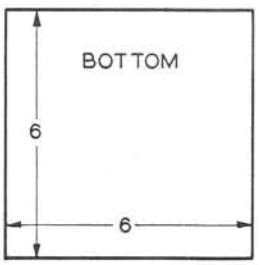
bill of materials

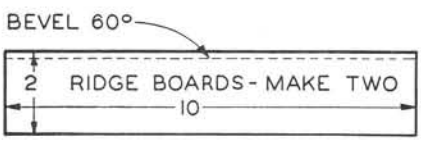
Front and back:	2—½	x 9½	x 9⅛	in.
Sides:	2—½	x 6	x 6	in.
Roof:	6—½	x 2½	x 10	in.
Ridge:	2—½	x 2	x 10	in.
Bottom:	1—½	x 6	x 6	in.

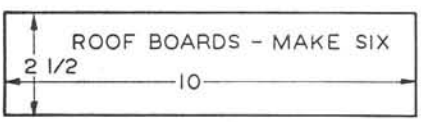
HOUSE FINCH

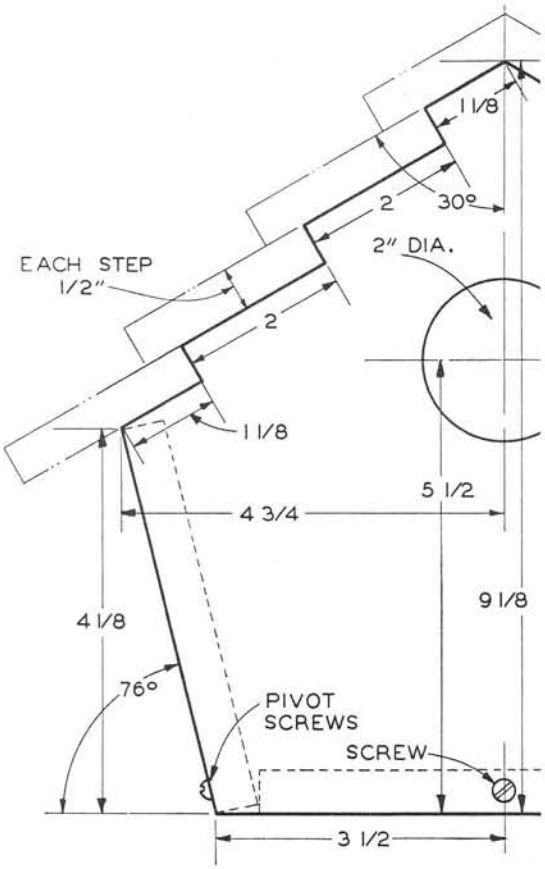












ALL STOCK
1/2"

FRONT AND BACK
NO HOLES IN BACK

MAKE LAYOUT ON
PAPER — TRACE ON
STOCK

house finch—shelter II

The squat appearance of this finch house is sure to attract attention. The house is simple to build although the angles of the front and back pieces must be accurately cut.

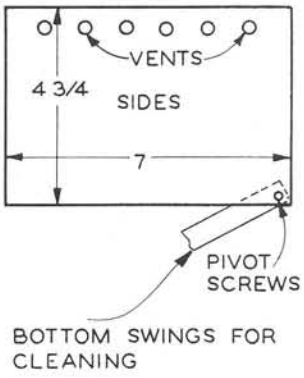
Nail the stock for the front and back pieces together so that you can cut them out at the same time. Bore the entrance hole in the front piece. Then make the other parts. Now nail the front and back to the side pieces; then nail on the roof. The bottom swings out on two pivot screws on the sides. Drill the sides for the brass pivot screws as indicated. Round off the bottom rear edge of the bottom to provide clearance. Next put another brass screw in the front to hold the bottom.

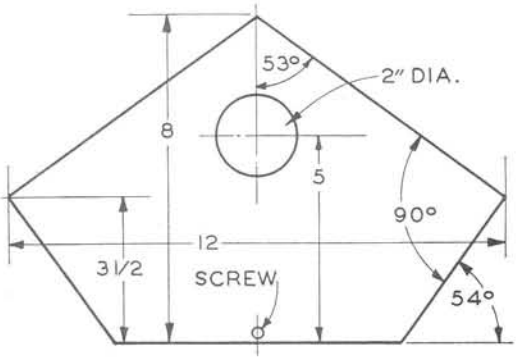
The house can be painted or stained as desired. Mount it on a pipe flange and galvanized pipe as indicated.

bill of materials

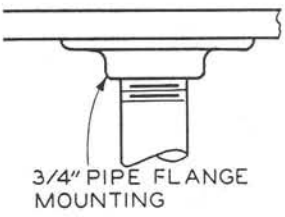
Front and back:	2—½ x 8 x 12 in.
Sides:	2—½ x 4¾ x 7 in.
Roof:	2—½ x 10 x 11 in.
Bottom:	1—½ x 6⅛ x 7 in.

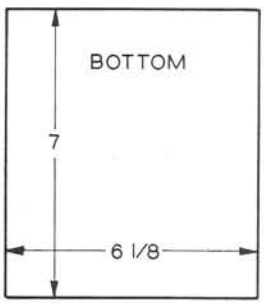
HOUSE FINCH

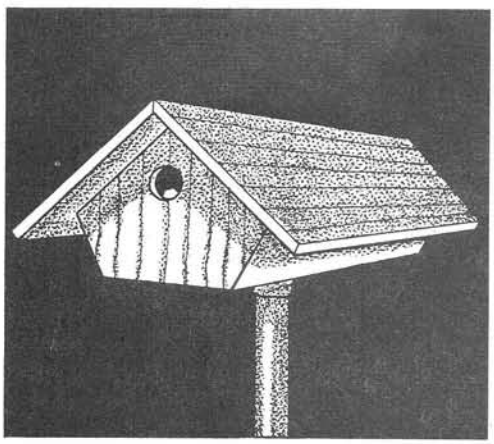




ALL STOCK 1/2"







song sparrow shelf

Although the shelter featured here is called a shelf, it really is a house without walls and is very much to the liking of the song sparrow.

Make the four corner posts as shown in the drawing and notch out the tops accurately for the front and back gables. Cut the gables and nail to the corner posts. Then from below, nail the posts to the floor, which is ¾-inch stock. As the last operation, nail on the two roof boards.

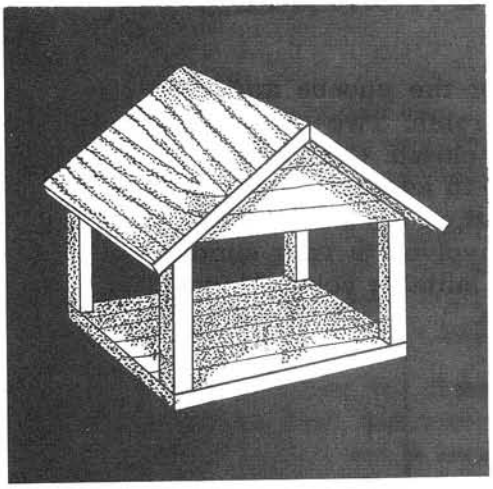
The house can be painted white, if desired, or any other color that is suitable. Mount it on a post one to three feet from the ground.

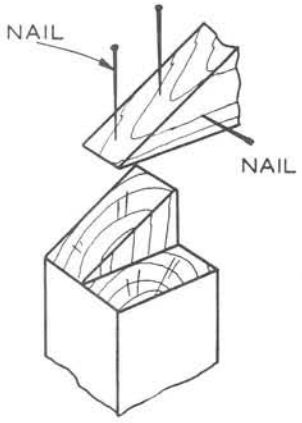
If you want, you can add several pegs in the floor to act as anchors to keep the nest from blowing or sliding off. These can be ¼-inch dia. dowels by ¾-inch long.

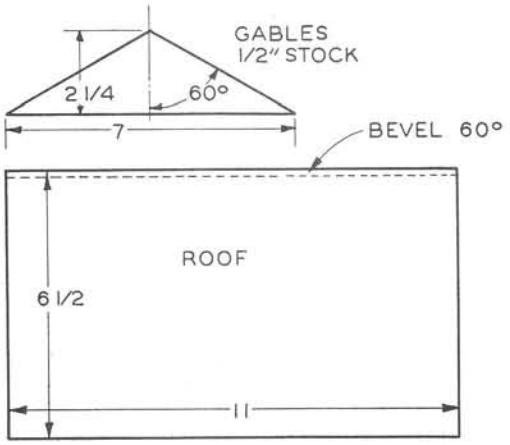
bill of materials

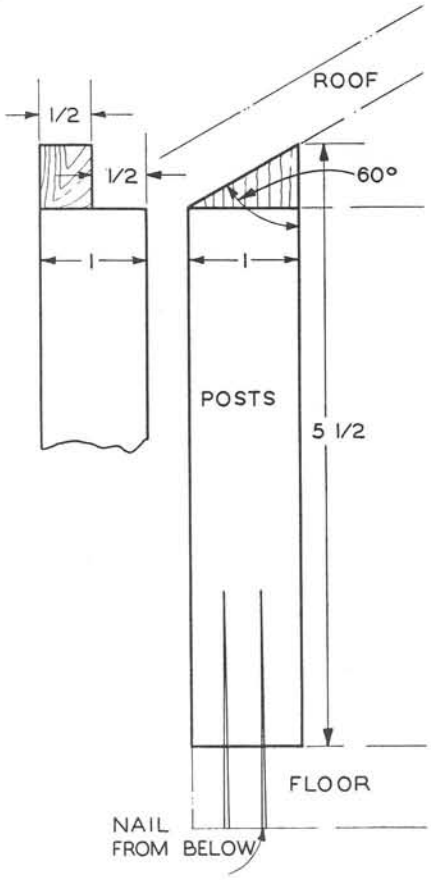
Posts:	4—1	x 1	x 5½ in.
Gables:	2—½	x 2¼	x 7 in.
Floor:	1—¾	x 7	x 7 in.
Roof:	2—½	x 6¼	x 11 in.

SONG SPARROW









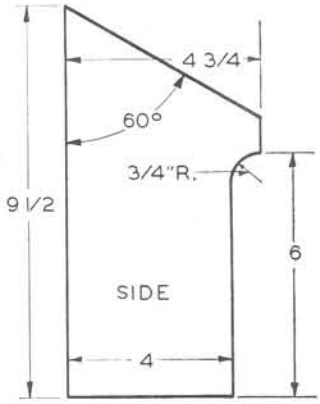
phoebe and barn swallow shelf

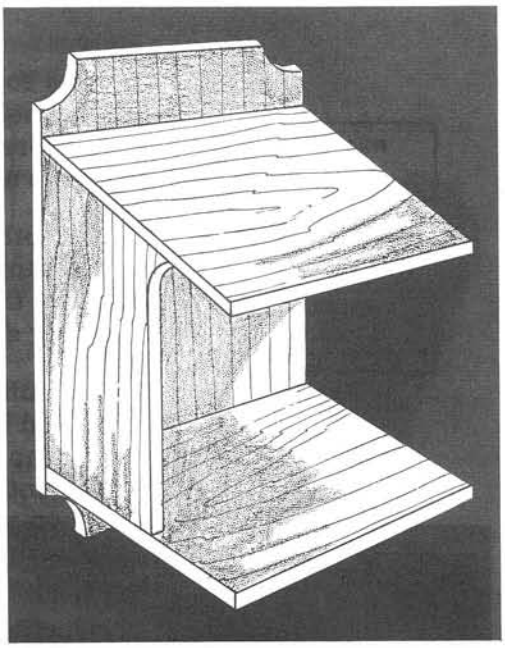
This shelf is designed for the phoebe and barn swallow, but is also used by the robin. Two sides are completely open; the third is almost closed. Cut all the pieces as per drawing. As the first step in assembling the shelf, nail the back to the floor. Then nail on the side and finally the roof. The construction work involved is very simple. Paint the shelf white or any other suitable color. Mount it in a secluded and protected place.

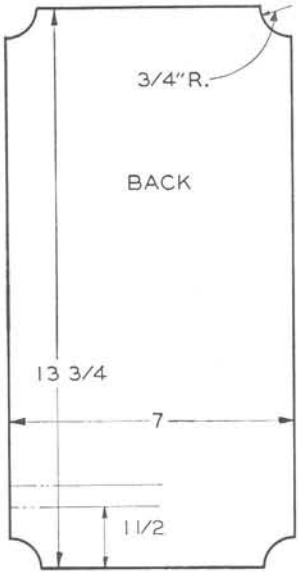
bill of materials

Back:	1—½	x 7	x 13¾	in.
Side:	1—½	x 4¾	x 9½	in.
Floor:	1—½	x 6	x 7	in.
Roof:	1—½	x 7½	x 7	in.

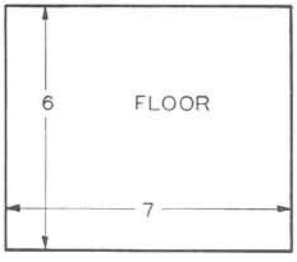
PHOEBE AND BARN SWALLOW







ALL STOCK 1/2"



barn owl house

Can we fool the barn owl and have him make his nest in this house just because it is the shape of a barn? Whatever his preferences, this novel house provides enough room for the large nest that the owl builds.

Nail together the stock for the front and back and cut them at the same time. Be sure that your dimensions are accurate. Cut the large 6-inch diameter opening in the front with a coping saw or a scroll saw. Then cut the other pieces.

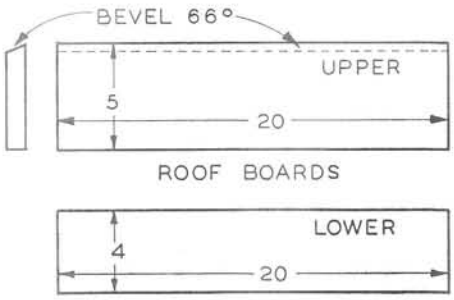
To assemble, nail the sides to the bottom; then nail on the front and back after the perch has been nailed to the front piece. The perch is made out of one half of the part cut out for the entrance opening. Next, nail on the lower roof pieces and then nail on the upper or ridge roof pieces. The bottom of this house does not swing out because the opening is large enough for easy cleaning.

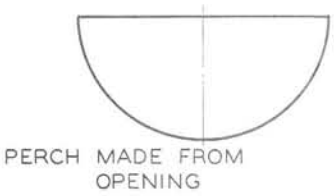
Paint or stain house with weatherproof materials. Any color is suitable.

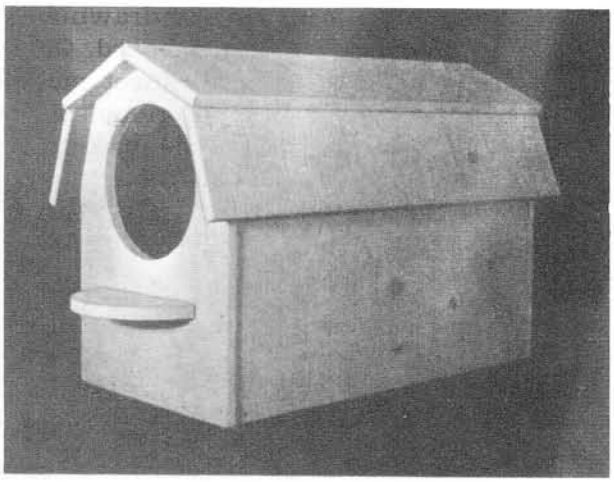
bill of materials

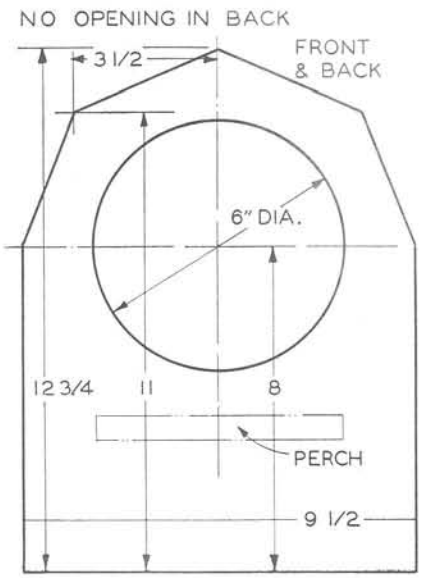
Front and back:	2—½ x 9½ x 12¾	in.
Sides:	2—½ x 7¾ x 17	in.
Bottom:	1—½ x 8½ x 17	in.
Lower roof parts:	2—½ x 4 x 20	in.
Upper roof parts:	2—½ x 5 x 20	in.
Perch:	1—½-in. x 3 in. (½ of the cutout from the entrance)	

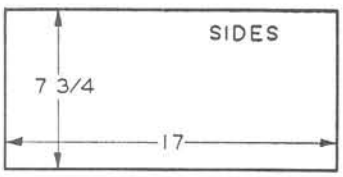
BARN OWL

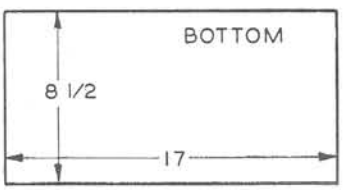












ALL STOCK 1/2"

wood duck house

Extensive research on the habits and shelter of the wood duck has been conducted by Mr. Frank C. Bellrose, Associate Game Specialist of the Natural History Division of the State of Illinois at Urbana, Illinois, and all of the information given here is from Circular 45 printed by the division.

The house shown is the best developed to date for the protection of the wood duck. The top and sides are covered with tin so that squirrels cannot enter. The elliptical hole keeps out raccoons. The house is thus made predator proof. The best wood to use is rough-cut cypress. Cheaper lumber is suggested for the parts to be covered with the metal.

Make the roof of four triangular pieces with the edges beveled to 60-degree angles and toenailed together as shown in the drawing. Mount the pyramid-shaped assembly on a solid board. Cover the entire front and half of both sides with sheet metal. Next make the other parts of the box having one side hinged to provide easy cleaning. Make the hinged side fit tight to prevent light from entering the house. Cover both the sides and the front with sheet metal. Drill holes in the bottom for drainage.

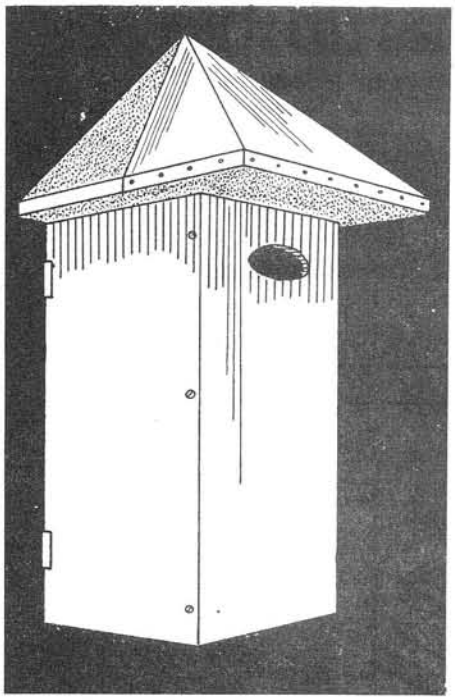
If the house is to be finished, stain it dark brown. Do not use light or bright colors.

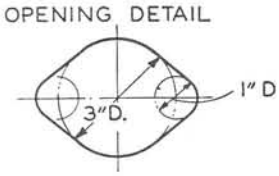
Cover the bottom with 2 or 3 inches of sawdust, shavings, or wood chips to provide a base for the nest. Mount the house on the side of a tree not more than a few hundred yards from water and about 10 to 25 feet above the ground. If you are planning to put up several, have the shelters 50 to 100 feet apart since the wood duck likes to nest in groups.

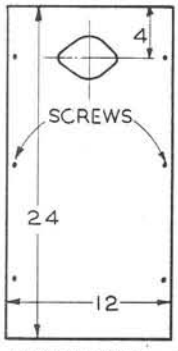
bill of materials

Roof:	4—	¾ x 18	x 12¾	in.
Roof floor:	1—	¾ x 18	x 18	in.
Front and back:	2—	¾ x 12	x 24	in.
Sides:	2—	¾ x 10½	x 24	in.
Bottom:	1—	¾ x 10½	x 10½	in.
Sheet metal:				
Top:	1—13½	x 25½	in.	
Front:	1—14	x 24	in.	
Sides:	2—12	x 24	in.	
Hinges (with screws)	2— 2	x 2	in.	

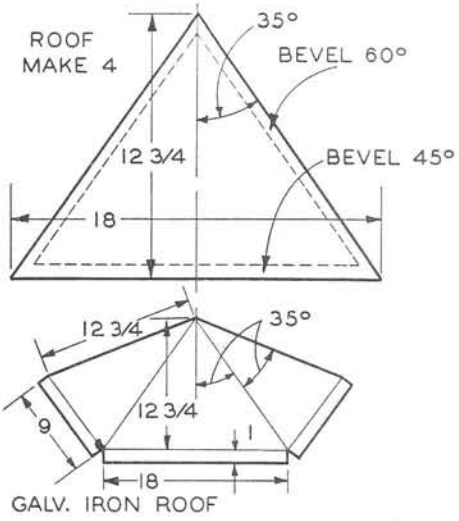
WOOD DUCK

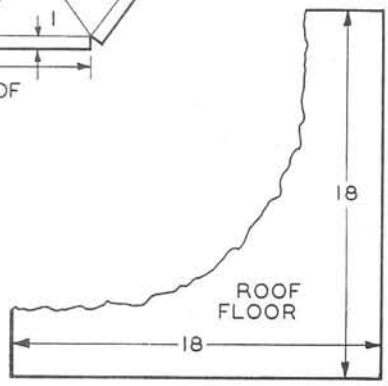


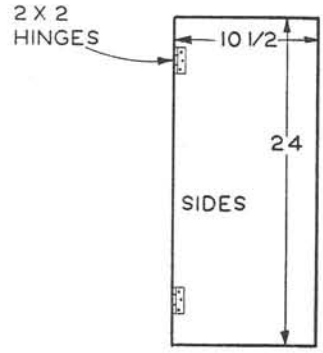




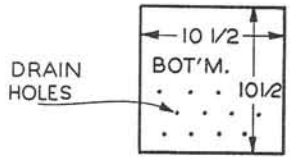
COVER FRONT WITH GALV.
SHEET IRON 12" X 24"





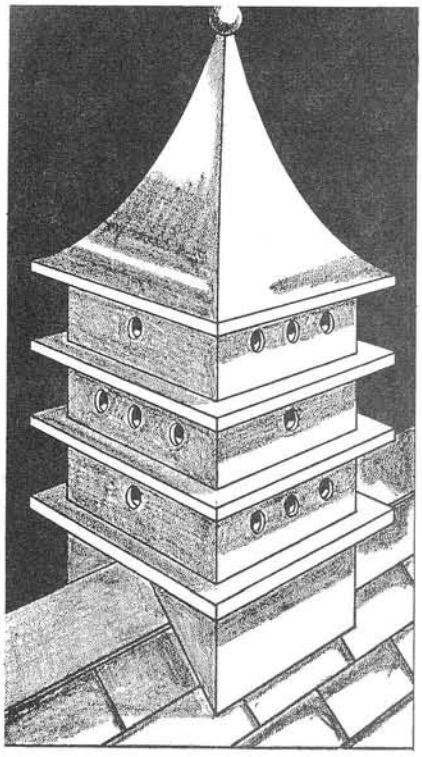


ALL STOCK
3/4"

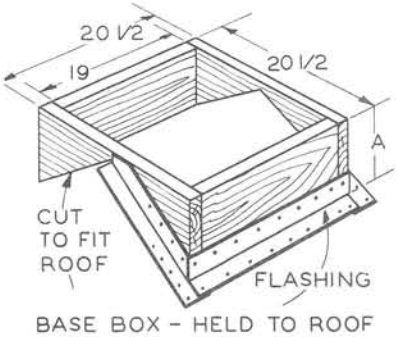


cupola 24-family martin house

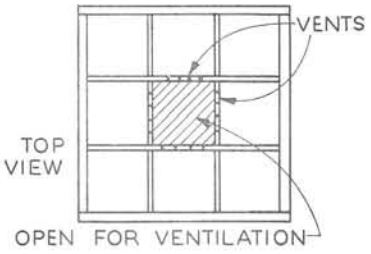
This martin house has established itself as a shelter of pleasing proportions and design so it will certainly be a welcome sight on the roof on which it is installed. A good place for it is on the garage roof.



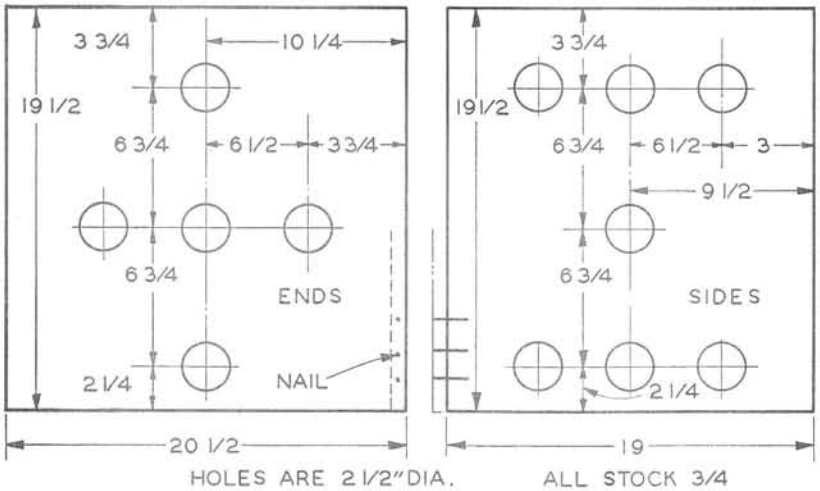
24-FAMILY MARTIN HOUSE



BASE BOX - HELD TO ROOF WITH ANGLE IRONS



OPEN FOR VENTILATION

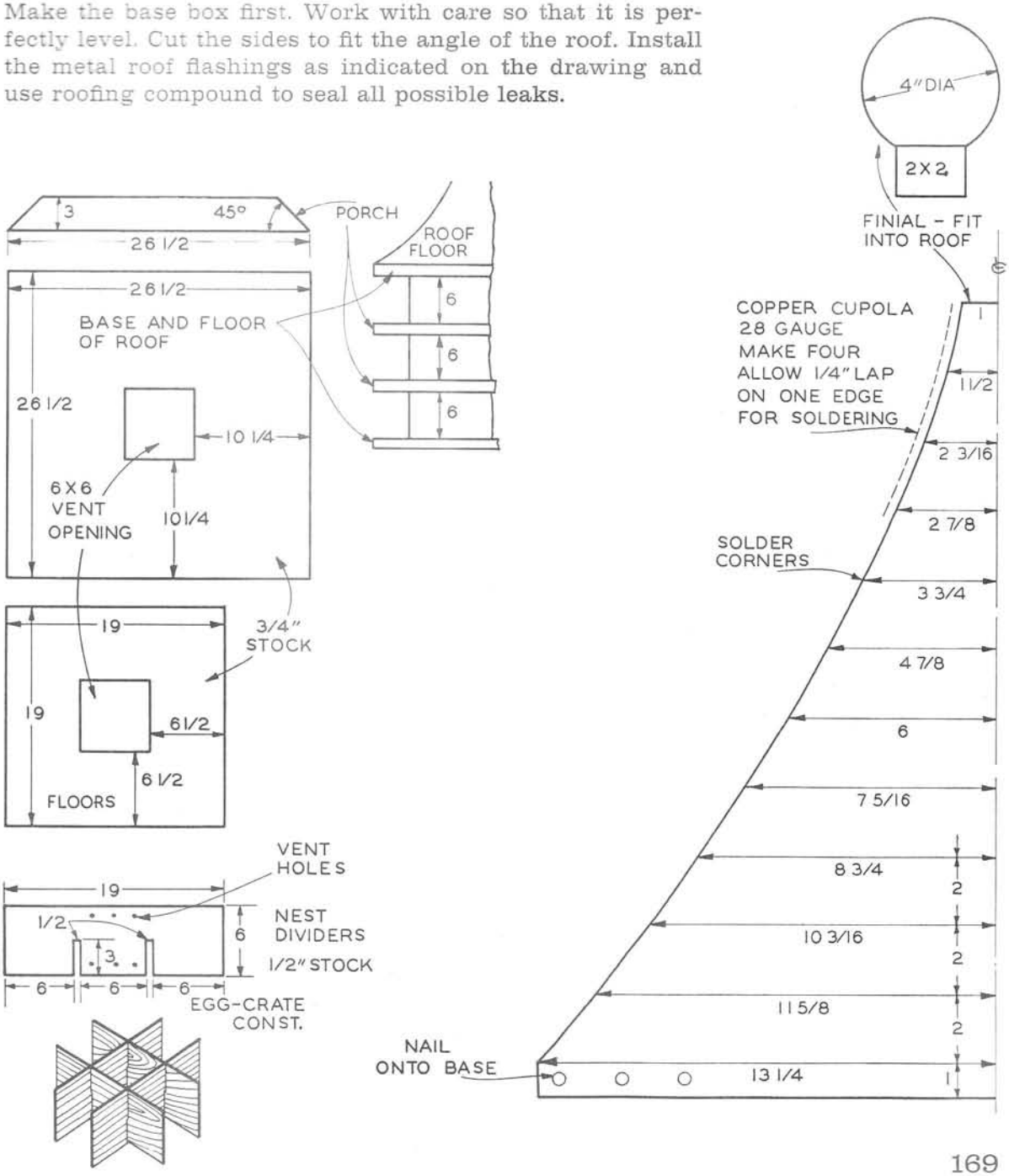


HOLES ARE 2 1/2" DIA.

ALL STOCK 3/4

The lower base box can be eliminated and the house mounted on a 4 by 4-inch wood post or galvanized iron pipe. For this large house, use ¾-inch outside plywood with ¾-inch pine for the porches.

Make the base box first. Work with care so that it is perfectly level. Cut the sides to fit the angle of the roof. Install the metal roof flashings as indicated on the drawing and use roofing compound to seal all possible leaks.



Next cut the side pieces and assemble them on the base. Nail on the porches from the inside and toenail the corners. Then make the egg-crate nest dividers and the two floors. Assemble these in the house. The center of the house is open from top to bottom to provide the ventilation that is necessary to keep the house cool. The floors and dividers are removable for easy cleaning. Do not make them fit too tight.

Cut the copper for the roof. If copper is too expensive or not available, use galvanized sheet metal. Solder the corners. Fit the block into the top end to hold the finial ball. Mount the metal roof on the square roof floor.

The roof section is held to the main part of the house with angle irons and screws so that it may be easily removed for cleaning.

Paint the house white or paint it to match the building on which it is mounted.

bill of materials

Base sides:	2—¾ x 19 in. and wide enough to take the slant of the roof.
Base ends:	2—¾ x 20½ in. and wide enough to take the slant of the roof.
Metal flashing:	3 x 3 in. to fit around the base.
House Ends:	2—¾ x 20½ x 19½ in.
Sides:	2—¾ x 19 x 19½ in.
Base and floor of roof:	2—¾ x 26½ x 26½ in.
Floors:	2—¾ x 19 x 19 in.
Dividers:	12—½ x 6 x 19 in.
Porches:	8—¾ x 3 x 26½ in.
Finial:	1—4-in. dia.
Finial block:	1—2 x 2 x 2 in.
Copper:	4—28 gauge x 27 x 23 in.

14-family martin house

This 14-family martin house, with its wide porches and corner posts has a southern colonial appearance.

Since the construction of the house is a sizable project, you can justify the purchase of outdoor weatherproof ¾-inch plywood for it, with the exception of the porches and the posts which are white pine. The entire attic portion is a separate unit and is attached to the main part of the house by iron angle brackets. It can be readily removed for easy cleaning of the house.

Make the bottom and attic floor, and then the sides. Assemble the sides and nail them to the bottom from below. Then make the posts and assemble them on the outside of the house with the porch. To add more grace to the house, the corner posts may be turned on the lathe as detailed.

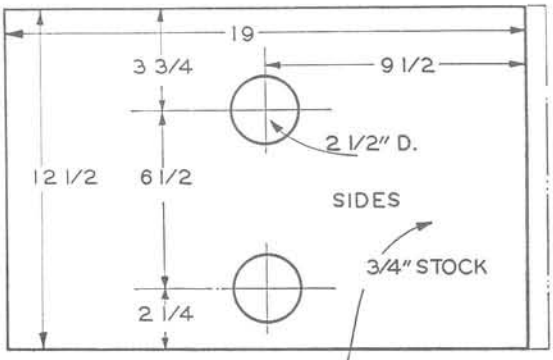
Now make the inside floor and the egg-crate nest dividers. Small cleat blocks can be nailed to the floors to keep the dividers in place. Cut the gables and the center partition for the attic next: there are two apartments in the attic with openings at both ends. Mount the gables on the attic floor board and then nail the two roof boards in place. The ridge can be covered with tin or roofing paper. Use angle irons to attach the attic section to the main part of the house.

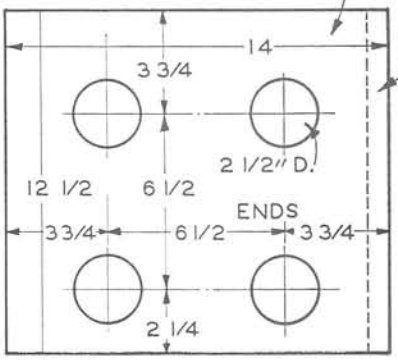
Paint the martin house white. Screw a large pipe flange on the bottom and mount the house on a galvanized iron pipe.

bill of materials

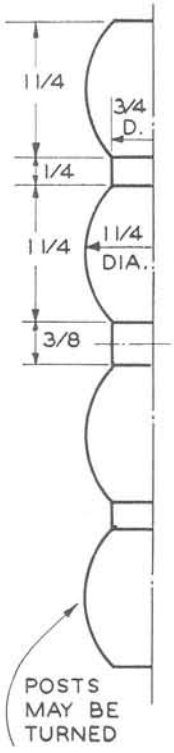
Bottom and attic floor:	2—	¾ x 20	x 26½	in.
Sides:	2—	¾ x 12½	x 19	in.
Ends:	2—	¾ x 14	x 12½	in.
Posts:	8—	1¼ x 1¼	x 5⅞	in.
Porches:	2—	¾ x 3	x 26½	in.
Porches:	2—	¾ x 3	x 20	in.
Floor:	1—	¾ x 12½	x 19	in.
Nest dividers:	2—	½ x 6	x 19	in.
Nest dividers:	4—	½ x 6	x 12½	in.
Gables:	3—	¾ x 5¾	x 20	in.
Roof:	2—	¾ x 13½	x 26½	in.

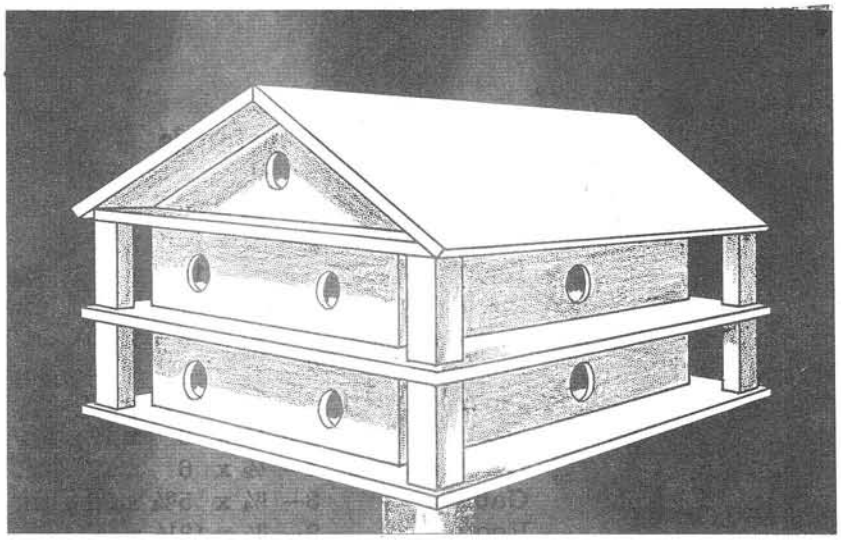
14-FAMILY MARTIN HOUSE

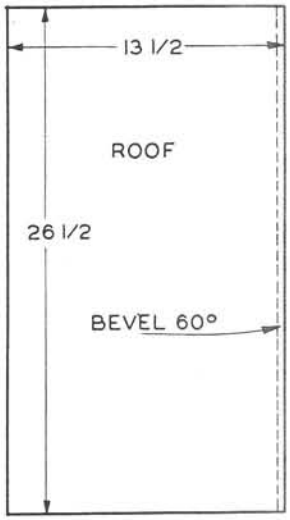


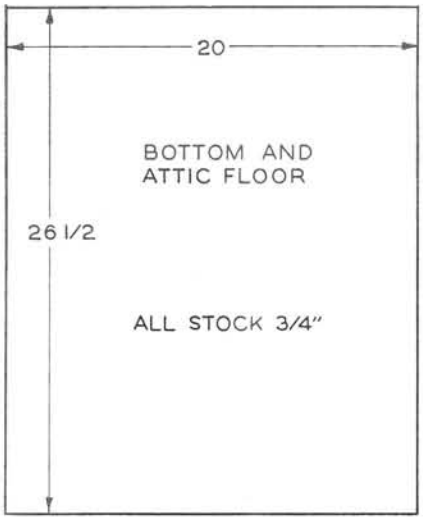


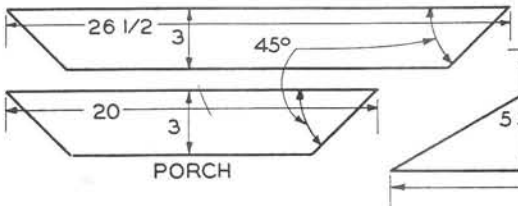
CORNER POSTS 1 1/4" SQ.

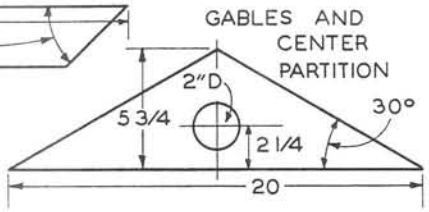




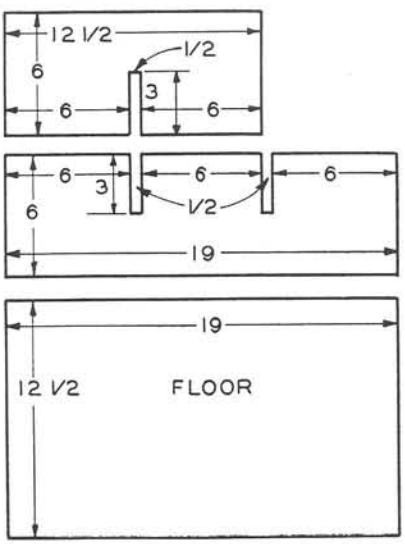


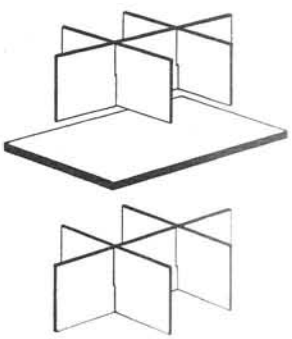






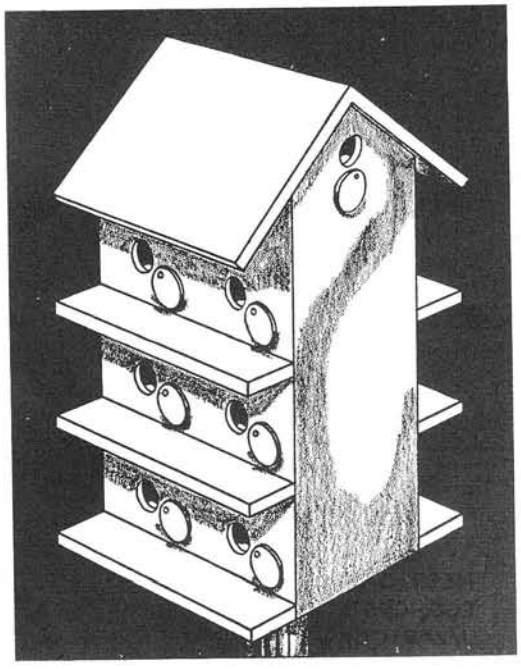
NEST DIVIDERS
EGG-CRATE CONST.
1/2" STOCK



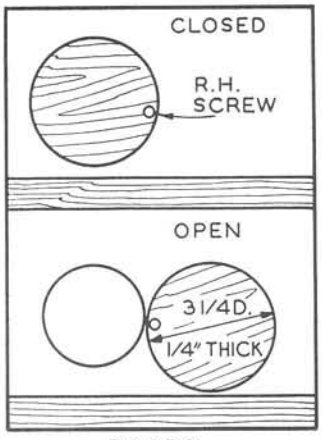


three-story 14-family martin house

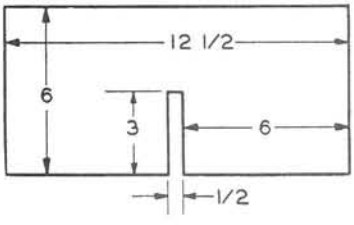
This martin house is a familiar sight to all of us and is a perennial favorite. It is not exceptionally difficult to make since all of the cuts are straight and only a moderate amount of accurate fitting is involved. The doors covering the en-



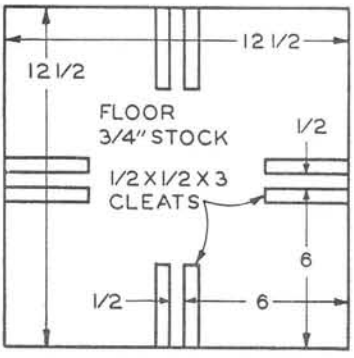
14-FAMILY
MARTIN HOUSE

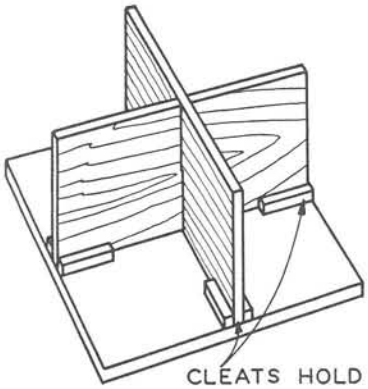


DOORS



NEST DIVIDERS
EGG-CRATE CONST.
1/2" STOCK

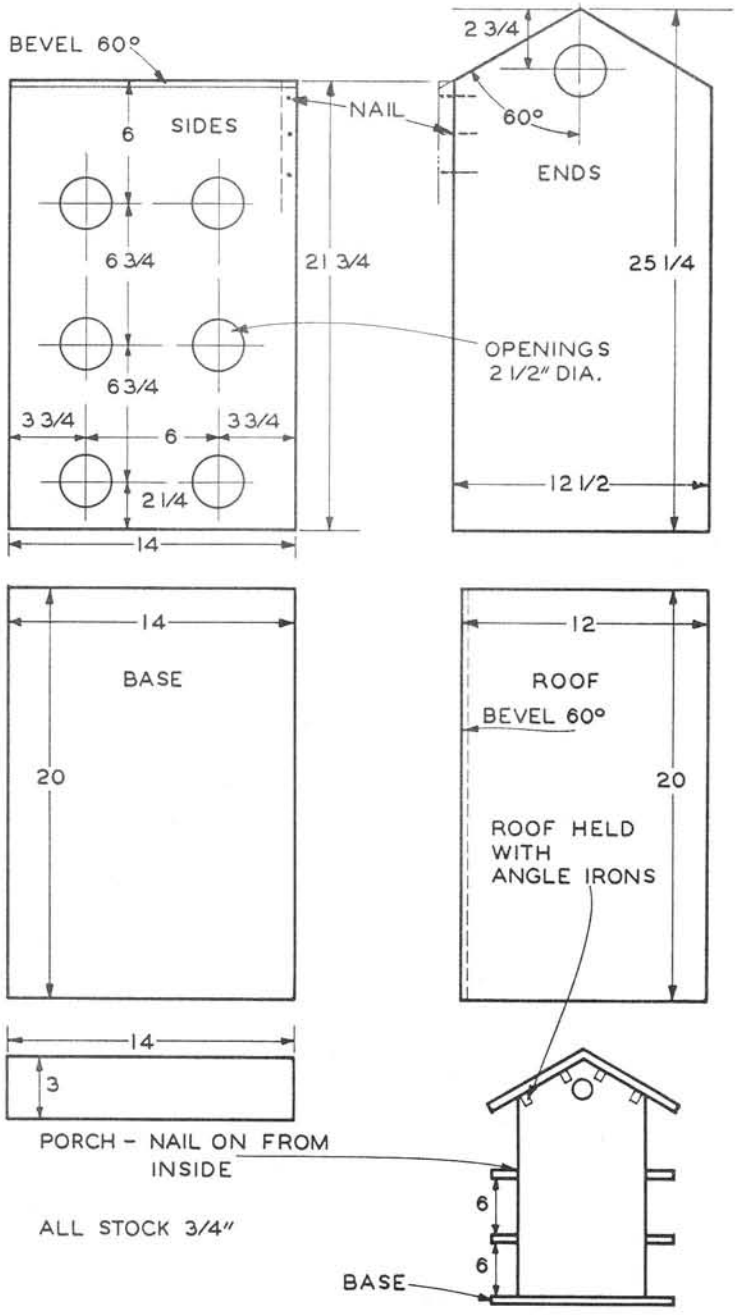




CLEATS HOLD
DIVIDERS IN PLACE

trances are an unusual feature. During winter they can be closed to keep out sparrows until the martins arrive. These same doors can be used on the other martin houses.

The entire house, with the exception of the porches, can be made of ¾-inch weatherproof outdoor plywood. Cut the sides and the ends. Nail or screw these together and mount on the ¾-inch base. Nail the porches in place from the inside.



Then make the three inside floors and the three sets of egg-crate nest dividers. Small cleats on the floors will hold the dividers in place as shown. Mount the floors and dividers inside the house. Make the doors and screw them in place. Make the roof last. It is held in place by iron angle brackets and can be easily removed for cleaning in the fall. When the doors are put in the open position, be sure to tighten the screws to keep them from shutting accidently and trapping the birds.

Paint the house white on the outside only; leave the inside natural. Mount it on a pipe or 4 by 4-inch post as explained on page 129. If the house is mounted on a wood post, it can be securely anchored with iron angle brackets. Wood scroll brackets can also be used.

bill of materials

Base:	1—¾ x 14 x 20 in.
Sides:	2—¾ x 14 x 21¾ in.
Ends:	2—¾ x 12½ x 25¼ in.
Porches:	4—¾ x 3 x 14 in.
Floors, inside:	3—¾ x 12½ x 12½ in.
Nest dividers:	6—½ x 6 x 12½ in.
Divider cleats:	24—½ x ½ x 3 in.
Roof:	2—¾ x 12 x 20 in.
Doors:	14—¼ x 3¼-in. dia.

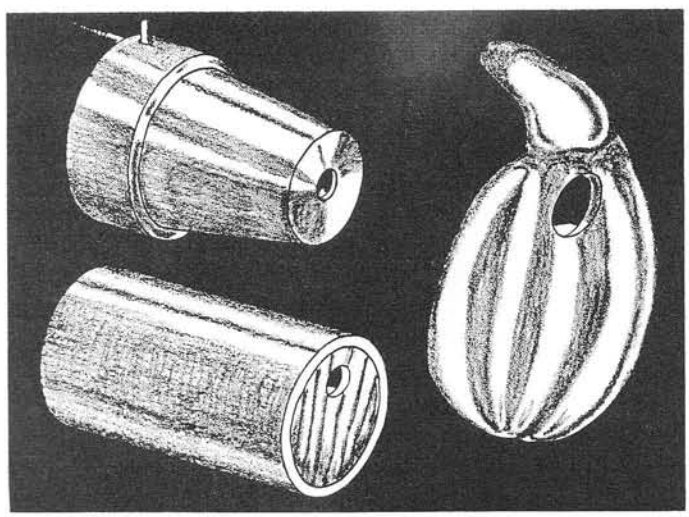
additional housing suggestions

Wrens will build houses in the most unusual places: an old tin can, a shoe, a discarded straw hat. All of these and countless others have been home to a nest full of young wrens. To cater to this whim of the wren, you can attract more of them to your garden perhaps if you make available such houses for them. Here are a few suggestions.

Take a large flower pot, open the hole in the bottom to ¾-inch, drill a small hole near the rim, and hang the pot on a hook screwed into the side of the garage or on a post. Or, take a section of clay drain tile such as farmers use. Plug up both ends with a wood disk, cut a ¾-inch hole in one end, and mount with a wire or steel shipping band on top of a post. You are sure to get a fine family of wrens.

Some people have had good luck with gourds. Select a large gourd, or several if you will. Hollow out the inside through the entrance hole and nail or hang it up most anywhere and you will get tenants.

In some places groups of these gourds are hung together on a dead tree or on special poles and are used by colonies of martins. There are limitless possibilities for improvised houses like this.



The wren will nest in almost any place. Flower pots, gourds, tiles, and the like make excellent nesting houses.

herring pail wren house

If you are looking for something out of the ordinary in a birdhouse, this wren house should meet with your approval. Although it is not a good policy to use bright colors for serious bird attracting, this birdhouse does lend itself to gay colors. It may become a prized decoration and, strange as it may seem, I put up several decorated in extremely bright colors, just for effect, and had families of wrens in them almost immediately. Of course, the house can be finished in some drab color such as deep brown, and this is perhaps the best thing to do.

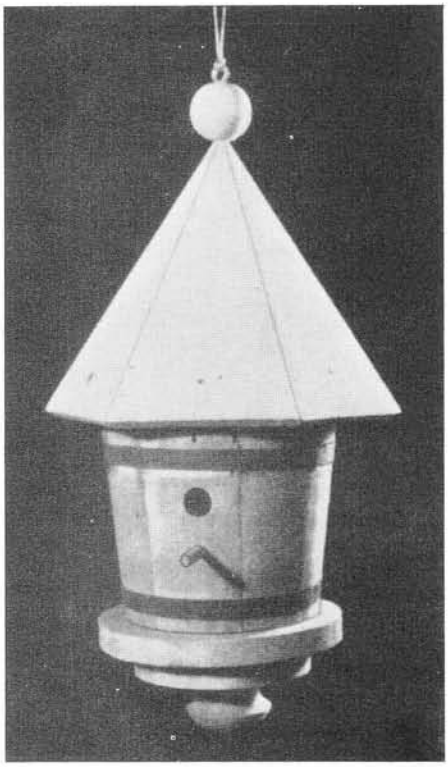
Use an ordinary herring pail. Cut a ¾-inch diameter entrance hole. Make the six roof pieces with 65 degree angle sides and toenail them together. Drill a hole through the top for the eye bolt and put on a ball ornament.

Turn the bottom ornamental pieces on a lathe and fasten them with screws from the inside to the bottom of the pail. Drill a hole for the ¼-inch dowel perch and insert the perch. Fasten the hexagonal roof on the top of the pail, driving brass screws in every other section.

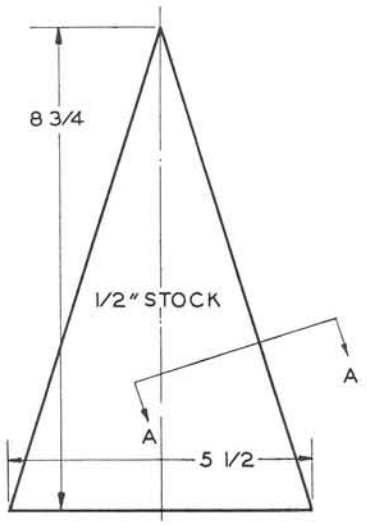
If desired, the lower turned ornament can be left off and the house can be mounted on the top of a post or stick.

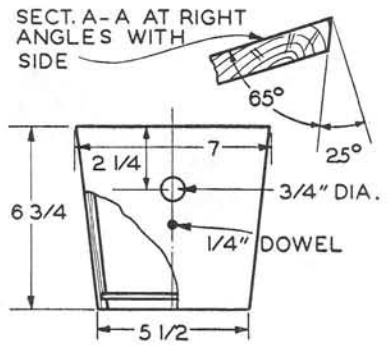
bill of materials

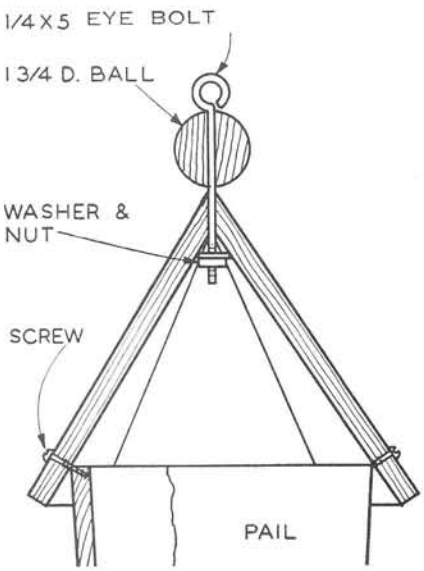
Pail:	1—7-inch. dia. x 6¾ in. high
Roof:	6— ½ x 5½ x 8¾ in.
Finial:	1—1¾-in. dia. ball
Base:	1— ¾ in. x 7-in. dia.
Base:	1— ¾ in. x 5-in. dia.
Turned part:	1—1¾ in. x 2½-in. dia.

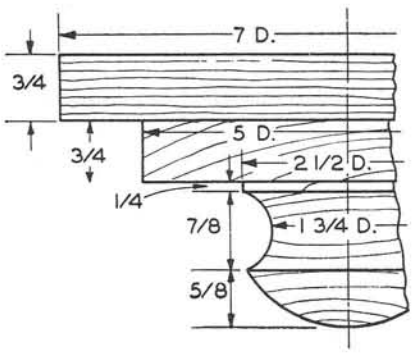


HERRING PAIL
WREN HOUSE

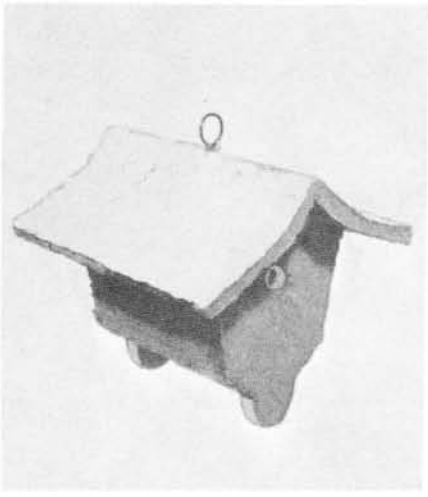








Many unique designs and shapes are possible when houses are made of cement and asbestos cement.



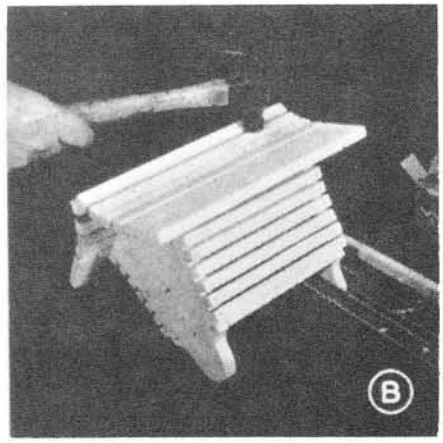
Cement houses are not affected by weather and will last indefinitely. They are easy to paint.

ornamental cement birdhouses

The construction of cement birdhouses will offer you a fine opportunity to use your ingenuity. Objects of almost any description can be duplicated such as rustic logs and other items of interesting and intricate shape.

The frame is made either of thin wood slats, as in the smaller house, shown, or of wood parts and wire mesh, as in the log house. In the latter, ½-inch mesh is used but ordinary window-screen wire works better. It can be placed over the larger mesh.

Make a dry mixture of one part cement and three parts asbestos cement, which is used by steam fitters. When thoroughly mixed, add just enough water to make a stiff, putty-like paste. With a putty knife or trowel, spread the mixture on the frames. It will take at least a day for the cement to dry, at which time it will have a white, hard finish that will be weatherproof. The surface can be painted any desired color. For the rustic log, apply the mixture so as to produce a rough surface with deep furrows for the bark. The cement dries slowly so that you can experiment. When dry, apply an undercoat of dark green paint and another coat of dark brown. Rub off the latter to let the green show through and you will have a very natural-looking birdhouse. These houses are cool in summer. Mount them securely because of their weight.



A. A frame made of wood and wire. Cover it with window screening.

B. A house made of wood slats.

C. Mix 1 part cement with 3 parts of asbestos cement.

D. Apply the mixture to the wire frame. Window screen will hold the mixture better than open mesh screen.

E. Moisten wood first, before applying cement to it.

birdhouse maintenance in winter

If you let your birdhouses go year after year without attention, they will become dilapidated. They will not only be useless as far as the birds are concerned, but they will be an eyesore in your yard and garden.

A birdhouse should be made so that it is easy to clean. All of the designs in this book are of this type. At the very end of the season, when the birds have definitely left for the south, get a ladder and check each house. Clean it out with a stiff brush and if you have reason to believe that there are lice or other parasites, disinfect it with a strong insect spray. You can cover the holes of a martin house and, if it is on a pole that can be lowered, leave it in the "down" position. It can remain this way until late spring. When the martins are on their way back to your locality, remove the doors and raise the house to the "up" position.

When making your inspection, see how securely the house is mounted. Be sure that the first heavy rain or windstorm will not blow it down. An accident of this kind will not only wreck the house, but it will kill the young or break the eggs. Any house that seems the least bit shaky or loose should be remounted and put up securely.

If the roof of your birdhouse is loose, if the bottom is warped, if a side is cracked, fall is the time to take it down for complete repairs. Renail loose members and replace broken parts if necessary. See that the house is sound throughout. If it needs paint or stain, now is the time to refinish it. When it is dry, return the house to its place outside so that it will have a chance to weather all winter. In this way, when the birds arrive in spring, the newness of the paint and stain will be worn off.

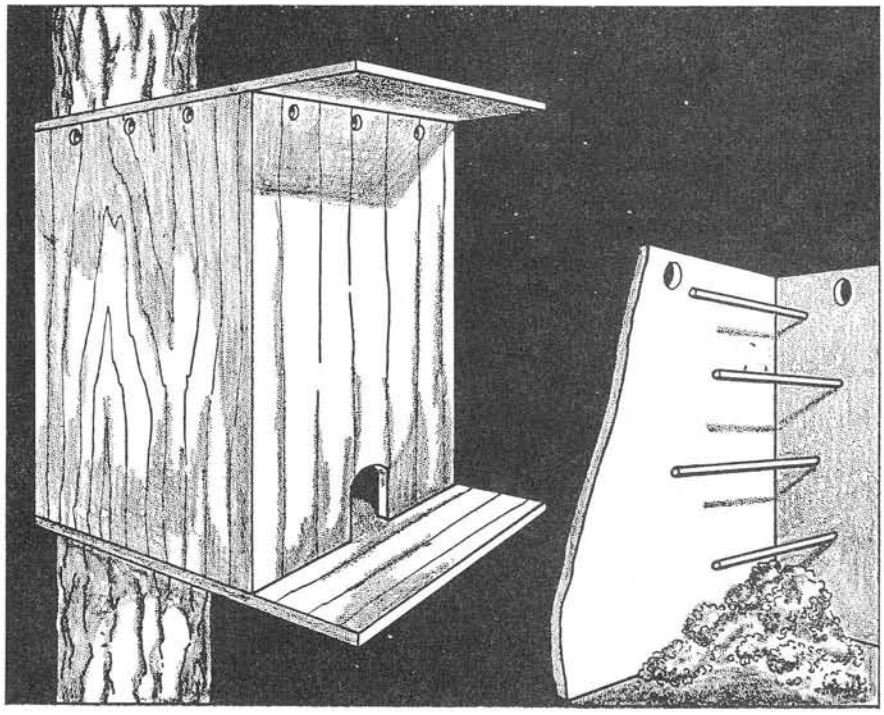
Winter is also a good time to relocate houses and feeders. Tend to the feeders first since they will be in use during the coming winter. You may want to add a few new houses or move some of your old ones. Now is the time to take care of these matters so that everything will be ready when the birds arrive in spring. If you reappraise and improve your program every year, it will be much more effective, because the wants of the birds will be taken care of and you will always be prepared for them.

some helpful hints

winter care of birds

Earlier in this book it was explained how, by feeding birds late into the fall, you can get some of them to spend the winter with you. The importance of food and water to the success of this venture was shown. It was also noted that when the birds have accepted our invitation, we must do more than just feed them; we must also provide shelters for them. Mention was made of the use of cornstalks to provide winter cover.

You can also give them winter protection by making shelter boxes as shown here. These need not be fancy. An old apple



box is suitable. The box is completely closed with an extending shelf-perch at the bottom. The opening is also at the bottom. Before the box is nailed closed, ¼-in dowel perches should be mounted inside. Fill the bottom with straw, excelsior, wood chips, or shavings, and you will have a comfortable, warm retreat for the birds.

Locate the box so that it has a southern exposure and is protected from the north wind. The box can be mounted on the side of the house. Evergreens nearby will be an additional attraction. The roof can extend if you desire, and the entire top can be covered with roofing paper. In addition to this protected box, you might put up a few open shelves in a sunny protected place. The birds will welcome the chance to gather, preen, and hop about here in the warm sun on cold winter days.

brush pile

A favorite pastime of birds is to hunt and scratch around a brush pile. In fall after you have finished pruning, pile the branches as illustrated, with a few sticking out on top to make natural roosts. This makes a fine place for the birds to congregate. If you put a feeder or two near, so much the better. The brush pile can be one of your winter feeding facilities.

A brush pile made in the fall from tree prunings is an excellent bird shelter and hide-away in winter.

John Terres—from the National Audubon Society

the care of sick birds

If a very young bird has fallen out of the nest, handle it as little as possible. Try to get it back into the nest. If this is not possible and if the bird is in immediate danger, place it on a soft cloth in an open box. Keep it warm and away from drafts. If the bird needs food, give it a mixture of one part baby cereal and one part hard-boiled egg every 15 to 20 minutes. Put the food on a smooth stick and place it far back in bird's mouth. Leave the bird where the parent can see it.

If an older bird is sick, there is little that can be done to help it. Return it to cover and nature will take care of it. If it is beyond hope, then it is best to put it out of its misery. To feed older birds, give them a mixture of one part ground raw beef and two parts grated carrots.

The title of this interesting picture could be: "When a fellow needs a friend." Birds should not be handled unnecessarily nor taken out of their nests. If they are blown out of the nest, however, they can be tamed and will stay near your home and yard.

Milwaukee Public Museum Photo

natural enemies of wild birds

Just as birds function in the balance of nature to keep down the insect population and the spreading of weeds, so they themselves have natural enemies which prevent them from multiplying in dangerous proportions. An excessive bird population would be just as harmful to man and nature as an oversupply of any other form of plant or animal life.

The animal we think of first as an enemy of the birds is the cat, which does, in fact, kill many of them. It is not possible for you to attract birds and play host to cats simultaneously. One or the other has to go and you will have to make up your mind which it is going to be. If stray cats are prowling about your property, catch them and turn them over to the humane society in your city. It is suggested that you obtain a copy of U. S. Biological Survey Bulletin No. 50, which shows how to make a cat trap.

Although we may think that cats are very destructive of bird life, they do not kill nearly as many birds as starvation, lack of water, and lack of shelter in winter. Man can remove many of these hazards to the birds and by doing so increase their numbers. Disease also kills many birds. For this reason yards, birdhouses, and feeders should be kept clean at all times.

Every city has more than enough sparrows and starlings and there seems to be very little that can be done to get rid of them. They can also be classified as another natural enemy because they compete for the food of the other birds. If trapped, even in large numbers, it seems that there are countless others to take their place. If you would like to trap sparrows, write for Leaflet No. 61, English Sparrow Control, issued by the United States Department of Agriculture.

Although these birds are pests, remember that they too eat their share of insects and weed seeds and in this way do a lot of good. Possibly it would be best for you to simply decide to put up with them. Since they like to eat on the ground, set aside an area for them away from the regular eating place of the other birds. Keep this place stocked with crumbs and other food. You will be able to bunch the undesirables here, segregating them from the better company. This area may even be on an adjoining vacant lot or some remote corner on your property that is out of sight where they will not disturb the other birds.

wildlife conservation agencies

Here are the leading national agencies that have as part of their goals the protection and study of bird life. You may write to them for further information. In addition, there are any number of local and State Conservation Departments that will be of help to you and with which you can cooperate.

Emergency Conservation Committee
767 Lexington Avenue, New York, N. Y.

Hawk Mountain Sanctuary Association
Kempton, Pa.

National Audubon Society
1130 Fifth Avenue, New York, N. Y.

National Parks Association
1300 New Hampshire Road N. E.
Washington D. C.

National Wildlife Association
1412 16th Street N. W.
Washington D. C.

Sierra Club
1050 Mills Tower, San Francisco, Calif.

Wilderness Society
2144 P Street N. W.
Washington, D. C.

Useful Reference Books

Guides and Aids to Identification and Location

General

Title	Author
A Field Guide to the Birds	Peterson
A Field Guide to Western Birds	Peterson
A Field Guide to the Birds of Texas	Peterson
A Field Guide to the Birds of Britain and Europe	Peterson
The Pocket Guide to Birds	Cruickshank
Bird's Nests: A Field Guide	Headstrom

Bird's Nests of the West: A Field Guide	Headstrom
Audubon Land Bird Guide	Pough
Audubon Water Bird Guide: Water, Game, and Large Land Birds	Pough
Audubon Western Bird Guide	Pough
A Laboratory and Field Manual of Ornithology	Pettingill
A Guide to Bird Finding West of the Mississippi	Pettingill
A Guide to Bird Finding East of the Mississippi	Pettingill
Naming the Birds at a Glance	Jenks
How to Know the Birds: An Introduction to Bird Recognition	Peterson
A Manual for the Identification of Birds in Minnesota	Roberts
A Field Guide for Locating the Eagle at Cassville, Wisconsin	Ingram
Birds of North America	Robbins

Birds by Region

Title	Author
Birds of America	Pearson
Birds of Columbia	Schauensee
Warblers of North America	Chapman
North American Waterfowl	Day
North American Birds of Prey	Sprunt
A Natural History of East and Central North American Birds	Forbush
Song and Garden Birds of North America	Wetmore
Water, Prey, and Game Birds of North America	Wetmore
Birds East of the Rockies	Reed
Birds of Mexico	Blake
Birds of the West	Booth
Handbook of Eastern North American Birds	Chapman
Audubon Birds of North America	Audubon
Arctic Birds of Canada	Snyder
Birds of Hawaii	Munro
Birds of East and Central America	Williams
Birds of New Zealand	Falla
Birds of the West Indies	Bond
Birds of North America	Brunn and Zim
Ducks, Geese, and Swans of North America	Kortright

American Birds of Prey	Bent
The Shorebirds of North America	Stout
Birds of Colorado	Bailty and Neidrach
Birds of the Blackhills	Pettingill
Eastern Birds	Hausman
Birds of Wisconsin	Gromme
Where to Find Birds in Minnesota	Morrison
Territorial Behavior in the Eastern Robin	Young
The Downy and Hairy Woodpeckers in Wisconsin	Young
Birds of the Northern Forest	Lansdowne
The California Condor	Koford
A Checklist of Iowa Birds	Grant
North American Bird Eggs	Reed
North American Birds	L. and M. Milne

Birds by Name

Title	Author
Flycatchers, Larks, Swallows, and Allies	Bent
Gallinaceous Birds	Bent
Gulls and Terns	Bent
Jays, Crows, and Titmice	Bent
Nuthatches, Wrens, Thrashers, and Allies	Bent
Petrels and Pelicans	Bent
Blackbirds, Orioles, Tanagers, and Allies	Bent
Cuckoos, Goatsuckers, Hummingbirds, and Allies	Bent
Thrushes, Kinglets, and Allies	Bent
Wagtails, Shrikes, Vireos, and Allies	Bent
Woodpeckers	Bent
Wood Warblers	Bent
The Roseate Spoonbill	Allen
The World of the Red-Tailed Hawk	Austing
Life History of the Song Sparrow	Nice
The Herring Gull's World	Tinbergen
The Sandhill Cranes	Walkinshaw
Know Your Ducks and Geese	Shortt and Cartwright
Hawks Aloft	Broun
The Wandering Albatross	Jameson
High Tide and East Wind: The Black Duck	Wright
The Passenger Pigeon	Schorger

The Wild Turkey	Schorger
Puffins	Lockley
Shearwaters	Lockley
The Golden Eagle	Murphy
A Guide to Bird Watching	Hickey

Books for the Study and Enjoyment of Birds

Title	Author
Fundamentals of Ornithology	Van Tyne and Berger
An Introduction to Ornithology	Wallace
Fundamentals of Ecology	Odum
Modern Bird Study	Griscom
Birds	Darling
Bird Biology	MacDonald
Bird Behavior	Goodwin
The Flight of Birds	Storer
A Classification of Birds of the World	Wetmore
A Classification of Recent Birds	Mayr and Amadon
The Book of Bird Life	Allen
Birds and Their Attributes	Allen
Birds Around the World	Amadon
Bird Display and Behavior	Armstrong
A Study of Bird Song	Armstrong
The World of Birds	Fisher and Peterson
Living Birds of the World	Gilliard
The Birds	Heinroth
A Lifetime With the Birds	Greene
An Introduction to Birds	Kieran
Marsh Birds	Bent
Shore Birds	Bent
Wild Fowl	Bent
Diving Birds	Bent
Land Birds	Jaques
Water Birds	Jaques
Water Birds—Bent's life Histories	Collins
Land Birds—Bent's Life Histories	Collins
Birds of the Ocean	Alexander
Waterfowl Tomorrow	Linduska
The Migrations of Birds	Dorst
Migration of Birds	Lincoln
Sea-Birds	Fisher and Lockley
Territory in Bird Life	Howard
Wildlife Conservation	Gabrielson
Population Studies of Birds	Lack
The Life of Birds	Welty
Natural History of Birds	Wing

	Birds in Our Lives	Stefferud
The Bird:	Its Form and Function	Beebe
	Bird Study	Berger
	Birds	Gabrielson and Zim
	Birds **(Golden Nature Series)**	Vera Webster
	Birds	Emlen and Archbald
	Biology of Birds	Lanyon
	Psychology of Birds	Brutt
	Bird Studies at Old Cape May of Coastal New Jersey	Stone
	Bird Portraits in Color	Roberts
	A Coloured Key to the Wildfowl of the World	Scott
	A New Dictionary of Birds of the World	Thomson
	Extinct and Vanishing Birds of the World	Greeway

Bird Watching and Documenting

Title	Author
An Introduction to Bird Life for Bird Watchers	Saunders
How to Watch Birds	Barton
A Guide to Bird Watching	Hickey
Bird Watcher's Anthology	Peterson
The Bird Watcher's America	Pettingill
The Bird Watcher's Quiz Book	Collins
Know Your Binoculars	Reichert
Hunting With the Camera	Cruickshank
Manual for Bird Banding	Lincoln
Drawing Birds	Postle
How to Draw Birds	Hunt

Attracting and Caring for Birds

Title	Author
Invitation to Birds	Eifert
Birds in Your Back Yard	Eifert
How to Attract the Birds	Lemmon
The New Handbook of Attracting Birds	McElroy
Your Bird Sanctuary	Peterson
Songbirds in Your Garden	Terres
Looking for a Bird's Nest	Scharff
Attracting Birds from Prairies to Atlantic	Davison
Gardens for Birds	Lemmon
More Birds for Your Garden	Terres

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